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AGE, SEX, AND SIZE COMPOSITION OF PACIFIC HERRING

FROM COASTAL SPAWNING SITES IN THE ARCTIC-YUKON-KUSKOKWIM REGION, 1992

By

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and

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ABSTRACT

During their 1992 spring spawning migration, Pacific herring *Clupea pallasi* were sampled from six of the eight commercial fishing districts within the Arctic-Yukon-Kuskokwim (AYK) Region of the Bering Sea. Between 18 May and 25 June, 8,639 herring were sampled for age, sex, and size information. Samples were collected using variable-mesh gillnets operated by Alaska Department of Fish and Game personnel and from subsistence and commercial gillnet harvests. Age-10 herring dominated the run biomass (22.3%); whereas age-4 herring was dominant in numbers of fish (24.3%). Recruits, ages 3, 4, and 5, accounted for 21.9% of the run biomass and 37.1% of the population by number. At Cape Romanzof the herring recruitment to the population was low (9.8%) in numbers of fish when compared to the other AYK districts. In five districts, herring recruitment composed 31.0% to 40.1% of the population by number, and in the Security Cove District herring recruits composed 70% of the population. The run biomass was higher and the commercial harvest lower than in past years. Ice conditions and low temperatures caused both a delay in the herring migration and prevented processors from reaching Norton Sound. The Norton Sound commercial fishery was canceled as a result. The run biomass was 90,243 tons for the surveyed portion of the commercial fishing districts. The commercial harvest was 2,829 tons, for an overall exploitation rate of 3.1%. The mean length within each age class progressively decreased northward from Security Cove to Norton Sound. In most samples, male-to-female ratios showed a slight preponderance of males.

KEY WORDS: Pacific herring, *Clupea pallasi,* Bering Sea, age, sex, size, biomass, population

INTRODUCTION

The purpose of this project was to estimate the age, sex, and size composition of the spawning biomass and harvest of Pacific herring *Clupea pallasi* in the Arctic-Yukon-Kuskokwim (AYK) Region of the Bering Sea. Since 1976, similar studies have been conducted annually by the Alaska Department of Fish and Game (ADF&G) (McBride et al. 1981; McBride and Whitmore 1981; Fried et al. 1982a, 1982b, 1983a, 1983b, 1984; Lebida et al. 1985, 1986; Lebida 1986; Lebida and Sandone 1987; Kerkvliet and Hamner 1988, 1989, 1990, 1991). Development of annual fishery management plans for Bering Sea herring stocks rely on these data.

The coastal waters of Alaska from Cape Newenham to Cape Prince of Wales composed the study area (Figure 1). There are eight regulatory commercial fishing districts located within the AYK Region. Security Cove, Goodnews Bay, Cape Avinof, Nelson Island, and Nunivak Island Districts are regulated within the Kuskokwim Area. Cape Romanzof, Norton Sound, and Port Clarence Districts are regulated within the Bering Sea-Kotzebue Area. Norton Sound is further subdivided into seven subdistricts (Figure 2). These areas and subdistricts are described in ADF&G (1992).

The 1992 season in the AYK Region was unusual in several ways. Because of ice conditions and low temperatures, herring arrived from 1 to 3 weeks later than average. For the first time in many years the herring population was largely composed of herring recruits in most districts. A historic record run biomass of herring was observed in Norton Sound. However due to ice, which prevented processors from reaching the Norton Sound District until late in the season, this fishery did not open. In the AYK Region, herring may only be taken by gillnet except in Norton Sound and Port Clarence Districts where beach and purse seines are allowed respectively. Since these two districts did not open, the 1992 AYK commercial harvest was taken solely by gillnet.

The total estimated run biomass of 90,243 tons for the surveyed portion of the AYK herring districts set a historic record that is 139.4% of the previous record biomass of 64,757 tons set in 1988. This dramatic increase is primarily due to a record biomass of herring observed in the Norton Sound District in 1992.

METHODS

Sampling Techniques

Samples were taken from the following commercial fishing districts: Security Cove, Goodnews Bay, Cape Avinof, Nelson Island, Cape Romanzof, and Norton Sound (Unalakleet and Cape Denbigh Subdistricts). Test fishing in the Nunivak Island District was hampered by ice conditions; therefore, the age composition of Nelson Island herring was applied to Nunivak Island herring. No age composition data for the Port Clarence District was collected because there has been no commercial fishery or test netting there since 1988.

Variable-mesh gillnets consisting of panels of 1 1/2, 2, 2 1/2 and 3 inch mesh were used to sample the herring population. This gear type is assumed to sample all age classes in the population in proportion to their abundance. ADF&G personnel made variable-mesh gillnet sets. Commercial fishermen used

standard-mesh gillnet to make commercial sets. For Kuskokwim herring districts, samples were collected from commercial gillnets with mesh sizes ranging from 2 1/8 to 3 1/8 inches. Commercial gillnet samples taken from Cape Romanzof were collected from nets with mesh sizes ranging from 2 3/4 to 3 inches. Age, size, sex and gonad maturity data was collected from herring catches taken by each gear type.

Data collection methods were similar to those described by Barton and Steinhoff (1980). Sample size goals were established by Conrad (Appendix A) and were based on the methods of Thompson (1987). Sampled fish were measured to the nearest millimeter, weighed to the nearest gram, and aged by counting scale annuli viewed with a microfiche reader. We attempted to sample at least 420 herring from each commercial gear type and fishing period in all districts. If fishing periods were separated by less than 24 hours, adjacent fishing periods were combined into one sample period. We attempted to collect fish from at least 10 boats in the gillnet fishery. Sixty fish per day was the sample goal for test net catches. Test sets were preferably of short duration to avoid saturating any mesh size with fish. An effort was made each day to sample fish from as many schools as feasible to promote sampling coverage of the run.

Biomass Estimation

The estimated herring run biomass, spawn time and spawn distribution was determined by aerial surveys flown throughout the season in each district. Aerial survey procedures followed those outlined by Lebida and Whitmore (1985). In districts where survey conditions were poor, commercial and test fish catch rates, spawn deposition or pre-season projections were used to estimate the run biomass.

The method used to calculate age composition of the mature herring run and escapement biomass differed between districts. For Security Cove, Goodnews Bay, Cape Avinof, Nelson Island and Nunivak Island Districts, age composition of the mature herring run biomass was estimated from variable-mesh gillnet catches. Age composition of the escapement biomass was calculated by subtracting the harvests from the run biomass for each age class. For Cape Romanzof and Norton Sound Districts, age class composition of the mature herring run was calculated by combining harvests with escapement biomass for each age class. Age composition of the escapement biomass was estimated from the age composition of herring caught by variable-mesh gillnets. In all districts, the run biomass, harvest, and escapement age composition in numbers of herring, was estimated by dividing the total tonnage of a given age class by the average fish weight in the class.

RESULTS AND DISCUSSION

ADF&G personnel examined 8,639 Pacific herring between 18 May and 25 June. The age, sex, and size composition of herring sampled during this time frame are summarized in Appendices B.1-B.14. The data based on variable-mesh gillnet catches for districts north of Security Cove suggests (nonstatistical comparisons = NSC) that older-aged, ie., age 6 and older herring arrived and spawned earlier in the season than younger herring (Figure 3). This temporal spawning segregation has been observed in previous years (McBride et al. 1981; Fried et al. 1982a, 1982b, 1983a, 1983b, 1984; Kerkvliet and Hamner 1988, 1989, 1990, 1991).

In 1992 the estimated AYK biomass was 90,243 tons for the surveyed portion of the commercial fishing districts. The commercial harvest was 2,829 tons, for an overall exploitation rate of 3.1% (Table 1). If exploitation rate is based solely on districts which had a 1992 commercial fishery the rate increases to 8.8%. The estimated run biomass was distributed among the districts as follows: 8.5% in Security Cove, 6.1% in Goodnews Bay, 3.7% in Cape Avinof, 5.7% in Nelson Island, 6.2% in Nunivak Island, 4.9% in Cape Romanzof, 63.1% in Norton Sound, and 1.8% in Port Clarence (Figure 4).

For the region, age-10 herring was the dominant age class making up 22.3% of the run biomass, and age-4 herring was the dominant age class in numbers of fish representing 24.3% of the population (Tables 1, 2; Figures 5, 6, 7). Age-9 and older herring accounted for 52.1% of the run biomass and 35.7% of the population by number. Recruits, ages 3, 4, and 5, represented 21.9% of the run biomass and 37.1% of the population by number. Ages-8 and -9 herring represented 45.1% of the AYK commercial harvest.

Even though the 1992 recruitment was higher than in recent years it did not reach the magnitude of the 1977 and 1978 year classes that entered the fishery in 1982 and 1983. In 1992 approximately 38 million (12%) age-5 herring were present in Security Cove, Goodnews Bay, Nelson Island, Cape Romanzof and Norton Sound Districts. Whereas in 1982 approximately 94 million (56%), and in 1983 approximately 46 million (21%) age-5 herring were present in these districts. Due to natural mortality, contribution to the run biomass by the 1977 and 1978 year classes (age-14 and -15 respectively) has diminished.

At Security Cove ages-4 and -5 herring were the predominant age classes representing 49.8% of the run biomass and 68.7% of the population by number (Tables 1, 2; Figures 5, 7). In this district, 33.7% of the run biomass and 18.3% of the population by number was represented by age-9 and older herring. Recruits represented 50.5% of the run biomass and 70.0% of the herring population by number (Figure 8). Age-8 and -9 herring made up 44.2% of the commercial harvest.

In the Goodnews Bay District age-8 herring dominated the run biomass (19.3%), but age-4 and -5 herring (38.8%) dominated the population in numbers of fish (Tables 1, 2; Figures 5, 7). Age-9 and older fish accounted for 52.3% of Goodnews Bay run biomass and 32.5% of the population by number. Recruits composed 22.2% of the run biomass and 40.1% of the population by number (Figure 8). Nearly half of the commercial harvest (49.8%) was represented by age-8 and -9 herring.

The dominant age classes in the Cape Avinof run biomass were ages-8 and -9 herring (35.6%); whereas in numbers of fish, age-4 herring dominated (19.8% ; Tables 1, 2; Figures 5, 7). Age-9 and older fish accounted for 46.3% of the run biomass and 32.2% of the population by number. Recruits represented 18.0% of the run biomass and 32.7% of the population by number (Figure 8). Age-8 and -9 herring accounted for 49.8% of the commercial harvest.

In the Nelson Island District ages 10 and 11 herring were the predominant age classes in the run biomass (31.7%), but in numbers of fish age 4 was the largest age class (19.8% ; Tables 1, 2; Figures 5, 7). Age-9 and older fish accounted for 62.8% of the run biomass and 46.6% of the population by number. Recruits represented 15.6% of the run biomass and 31.2% of the population by number (Figure 8). Age-10 herring composed 21.8% of the commercial catch.

The Nunivak Island herring run was not sampled. Based on Nelson Island sample data, age-9 and older herring was dominated in the run biomass (62.8% ; Tables 1, 2 ; Figures 6, 7). The largest herring age class in the commercial harvest was age-9 (21.8%).

At Cape Romanzof, the dominant age class in run biomass was age-10 (21.7%) herring. Age-8 (20.4%)

and age-10 (20.3%) herring were the dominant age classes in numbers of fish (Tables 1, 2; Figures 6, 7). Age-9 and older herring accounted for 71.7% of the run biomass and 63.6% of the population by number. Recruits composed 4.8% of the run biomass and 9.8% of the population by number (Figure 8). Age-8 herring composed 24.6% of the Cape Romanzof commercial harvest.

The largest herring age class for the Norton Sound run biomass was age-10 herring (27.5%); however, age-4 herring was largest in numbers of fish (25.5% ; Tables 1, 2; Figures 6, 7). Age-9 and older fish represented 51.3% of the run biomass and 35.5% of the population by number. Herring recruits represented 20.8% of the run biomass and 34.8% of the population by number (Figure 8).

Throughout the region, mean length by district within age classes generally decreased (NSC) in a southern to northern direction (Figure 9). This trend parallels those noted in previous years (Lebida et al. 1985, 1986; Lebida and Sandone, 1987; Kerkvliet and Hamner 1988, 1989, 1990, 1991).

Overall, percentages of males and females remained fairly equal with males slightly outnumbering females. The male:female ratios for variable mesh gillnet catches were as follows: Security Cove = 1.3:1, Goodnews Bay = 1.4:1, Cape Avinof = 0.8:1, Nelson Island = 1.2:1, Cape Romanzof = 1.4:1, Norton Sound 1.1:1., combined variable mesh gillnet samples = 1.2:1 and combined commercial harvest = 1.0:1.

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Table 1. Age composition of Pacific herring run, harvest, and escapement biomass for districts within the Arctic–Yukon–Kuskokwim Region, Alaska, 1992.

	Security Cove		Goodnews Bay		Cape Avinof		Nelson Island		Nunivak Island		Cape Romanzof		Norton Sound		Arctic–Yukon–Kuskokwim Total	
Age	% by weight	tons	% by weight	tons	% by weight	tons	% by weight	tons	% by weight	tons	% by weight	tons	% by weight	tons	% by weight	tons
								Run								
3	0.7	52	0.3	14	0.3	9	0.3	18	0.3	19	0.0	0	0.1	44	0.2	156
4	20.7	1,606	7.0	391	10.3	356	8.7	460	8.7	497	2.4	106	14.3	8,283	13.0	11,699
5	29.1	2,265	14.9	829	7.4	256	6.6	347	6.6	375	2.4	108	6.4	3,688	8.7	7,868
6	1.3	104	2.1	117	11.3	388	3.5	183	3.5	198	3.0	135	18.2	10,550	12.9	11,676
7	1.2	91	4.2	236	6.1	209	3.3	173	3.3	187	1.6	72	3.5	2,006	3.3	2,975
8	13.3	1,035	19.3	1,073	18.4	633	15.0	790	15.0	854	18.8	848	6.3	3,668	9.9	8,901
9	9.3	720	13.3	743	17.2	593	12.5	658	12.5	712	13.7	617	10.2	5,929	11.1	9,972
10	6.0	469	10.6	588	13.4	460	15.7	827	15.7	894	21.7	978	27.5	15,948	22.3	20,165
11	9.9	772	12.7	706	7.5	257	16.0	842	16.0	910	15.2	684	7.9	4,586	9.7	8,758
12	3.0	232	9.8	546	5.4	186	10.4	548	10.4	592	9.4	422	2.5	1,436	4.4	3,961
13+	5.5	426	5.9	329	2.8	97	8.2	430	8.2	465	11.7	529	3.2	1,835	4.6	4,112
Total	100.0	7,773	100.0	5,572	100.0	3,446	100.0	5,275	100.0	5,703	100.0	4,500	100.0	57,974	100.0	90,243
								Harvest								
3	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0		0	0.0	0
4	0.0	0	0.0	0	0.1	0	0.0	0	0.0	0	0.0	0		0	0.0	0
5	1.0	8	3.6	26	0.2	1	0.2	0	0.2	0	0.0	0		0	1.3	36
6	1.2	10	1.8	14	3.3	15	1.4	3	1.4	0	0.7	4		0	1.6	46
7	2.8	23	2.8	21	5.7	26	3.0	7	3.0	1	0.8	4		0	2.9	82
8	20.8	173	27.5	204	28.6	129	16.5	40	16.5	4	24.6	130		0	24.1	681
9	23.4	195	22.3	165	21.2	96	18.2	45	18.2	5	16.5	87		0	21.0	593
10	15.2	127	6.7	49	15.5	70	21.8	54	21.8	6	17.9	95		0	14.2	401
11	18.2	152	16.3	121	14.3	65	15.8	39	15.8	4	17.6	93		0	16.7	474
12	9.6	80	11.9	88	7.5	34	10.7	26	10.7	3	8.4	45		0	9.8	276
13+	7.8	65	7.1	52	3.6	16	12.6	31	12.6	3	13.5	72		0	8.5	239
Total	100.0	834	100.0	740	100.0	452	100.0	246	100.0	27	100.0	530	0.0	0	100.0	2,829
								Escapement								
3	0.7	52	0.3	14	0.3	9	0.4	18	0.3	19	0.0	0	0.1	44	0.2	156
4	23.2	1,606	8.1	391	11.9	356	9.1	460	8.8	497	2.7	106	14.3	8,283	13.4	11,699
5	32.5	2,257	16.6	803	8.5	255	6.9	346	6.6	375	2.7	108	6.4	3,688	9.0	7,831
6	1.4	94	2.1	104	12.5	373	3.6	180	3.5	198	3.3	131	18.2	10,550	13.3	11,631
7	1.0	68	4.5	215	6.1	183	3.3	165	3.3	186	1.7	68	3.5	2,006	3.3	2,892
8	12.4	862	18.0	869	16.8	504	14.9	750	15.0	850	18.1	718	6.3	3,668	9.4	8,220
9	7.6	525	12.0	578	16.6	497	12.2	614	12.5	707	13.3	530	10.2	5,929	10.7	9,379
10	4.9	342	11.1	539	13.0	390	15.4	773	15.6	888	22.3	884	27.5	15,948	22.6	19,764
11	8.9	620	12.1	585	6.4	193	16.0	803	16.0	906	14.9	591	7.9	4,586	9.5	8,284
12	2.2	152	9.5	457	5.1	152	10.4	521	10.4	589	9.5	377	2.5	1,436	4.2	3,685
13+	5.2	361	5.7	277	2.7	81	7.9	399	8.1	462	11.5	457	3.2	1,835	4.4	3,872
Total	100.0	6,939	100.0	4,832	100.0	2,994	100.0	5,029	100.0	5,676	100.0	3,970	100.0	57,974	100.0	87,414

Table 2. Age composition of Pacific herring spawning populations expressed in percent age by number for districts within the Arctic–Yukon–Kuskokwim Region, Alaska, 1992.

Age	Security Cove	Goodnews Bay	Cape Avinof	Nelson Island	Nunivak Island	Cape Romanzof	Norton Sound	Arctic–Yukon–Kuskokwim
3	1.3	1.3	1.6	1.1	1.1	0.0	0.2	0.5
4	32.7	20.9	19.8	19.8	19.7	5.7	25.5	24.3
5	36.0	17.9	11.3	10.3	10.2	4.1	9.1	12.3
6	1.3	2.9	12.9	4.5	4.5	4.3	20.7	15.1
7	1.0	8.8	6.8	3.4	3.4	1.9	3.5	3.7
8	9.3	15.9	15.5	14.3	14.3	20.4	5.4	8.3
9	5.9	9.1	13.6	10.8	10.9	13.2	7.8	8.5
10	3.3	7.0	9.2	12.2	12.3	20.3	18.9	15.6
11	5.1	7.3	4.7	11.4	11.4	13.3	5.3	6.3
12	1.5	5.6	3.1	7.1	7.1	7.7	1.5	2.6
13+	2.5	3.5	1.6	5.1	5.2	9.1	2.0	2.7

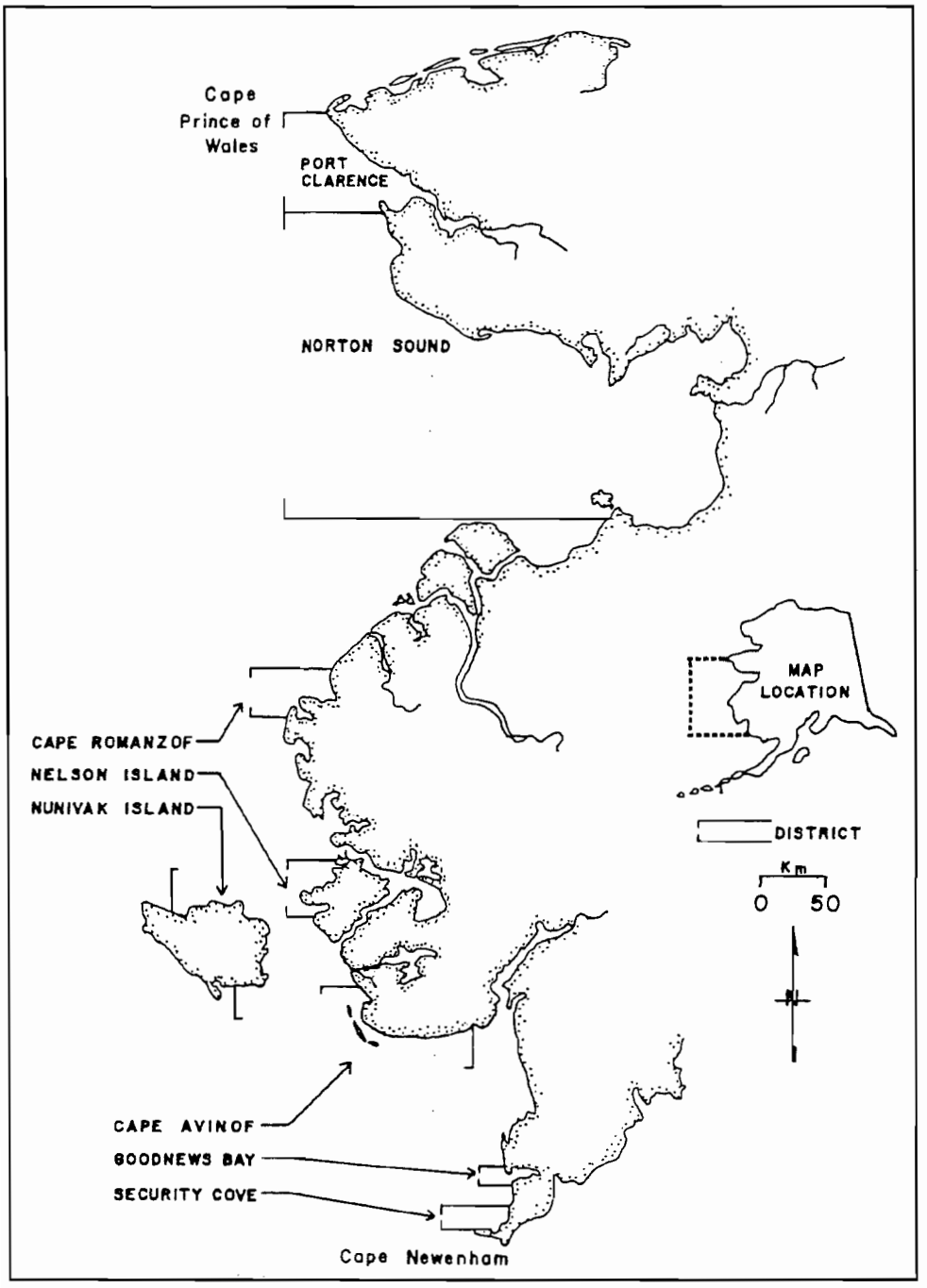

Figure 1. Commercial herring fishing districts within the Arctic-Yukon -Kuskokwim Region, Alaska, 1992.

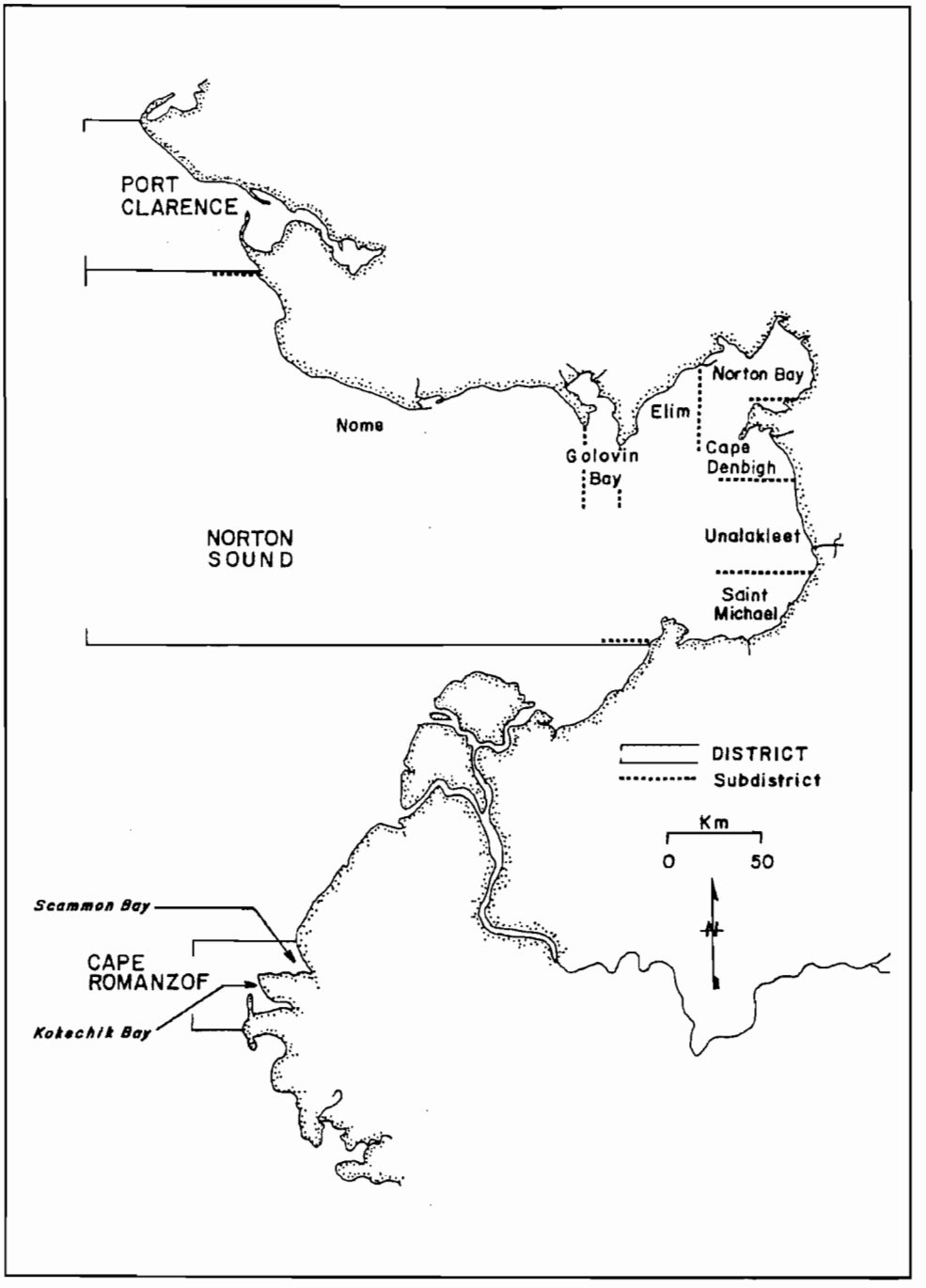

Figure 2. Commercial herring fishing districts, and subdistricts of Norton Sound and Cape Romanzof, Arctic-Yukon-Kuskokwim Region, Alaska, 1992.

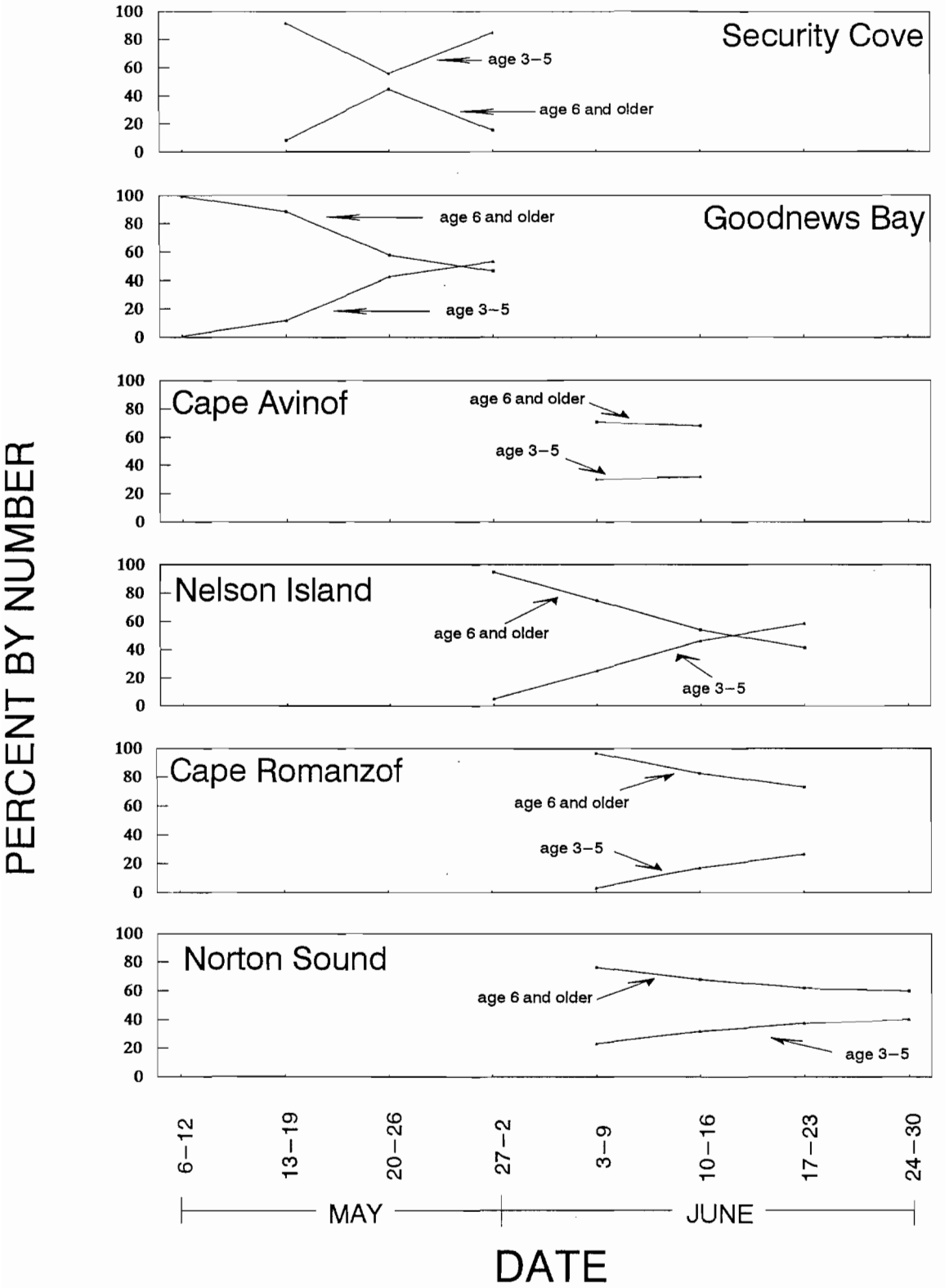

Figure 3. Spawning time comparison of Pacific herring grouped by ages 3 to 5 and age 6 and older for districts within the Arctic–Yukon–Kuskokwim Region, Alaska, 1992.

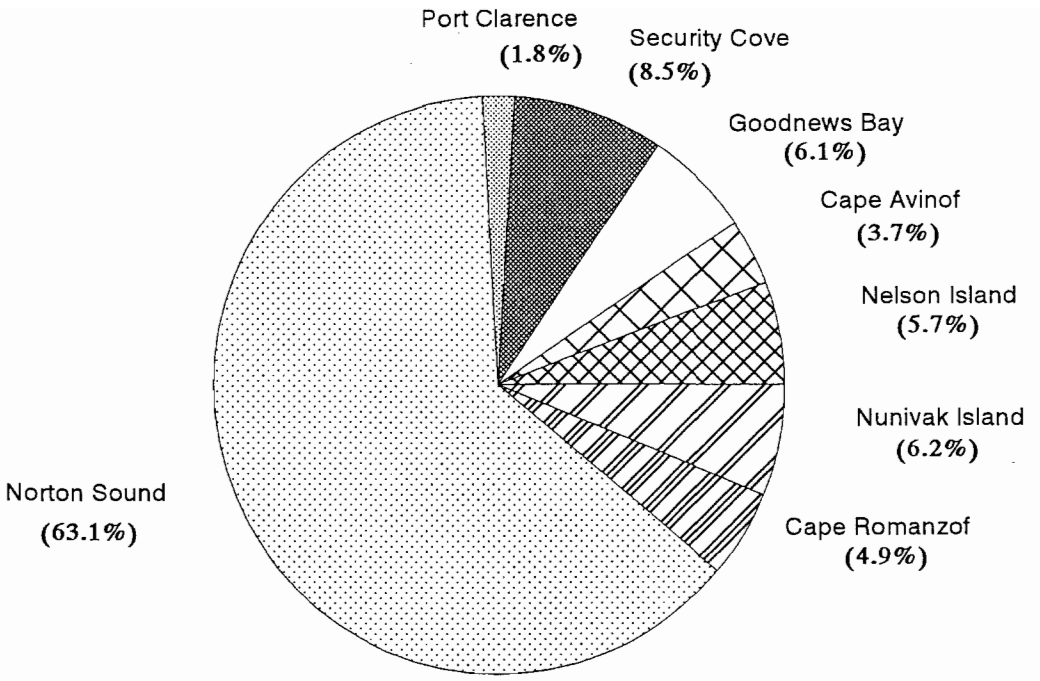

Figure 4. Pacific herring run biomass distribution by commercial fishing district, Arctic–Yukon–Kuskokwim Region, Alaska, 1992.

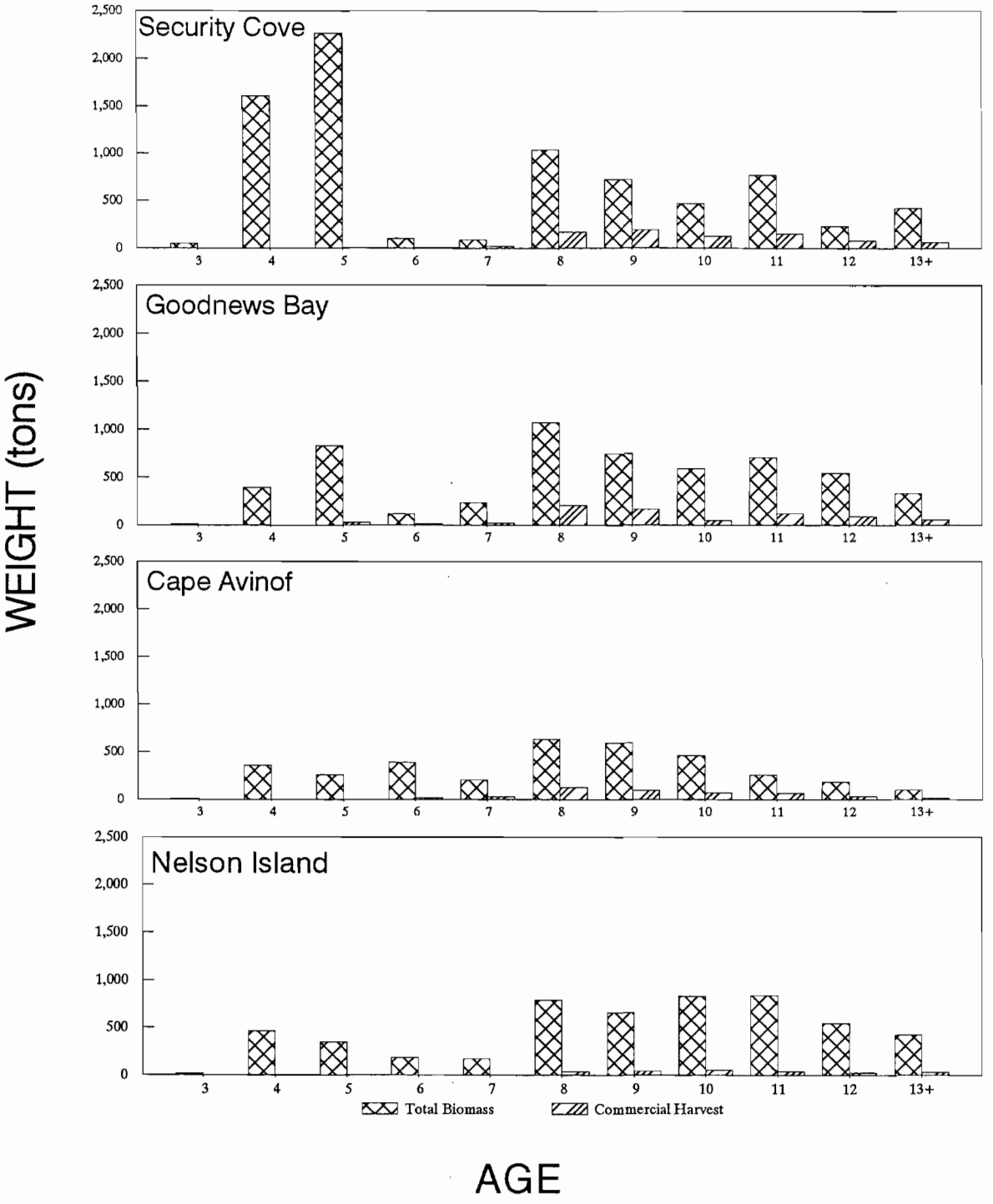

Figure 5. Age composition of Pacific herring run and harvest for the Security Cove, Goodnews Bay, Cape Avinof, and Nelson Island Districts within the Arctic–Yukon–Kuskokwim Region, Alaska, 1992.

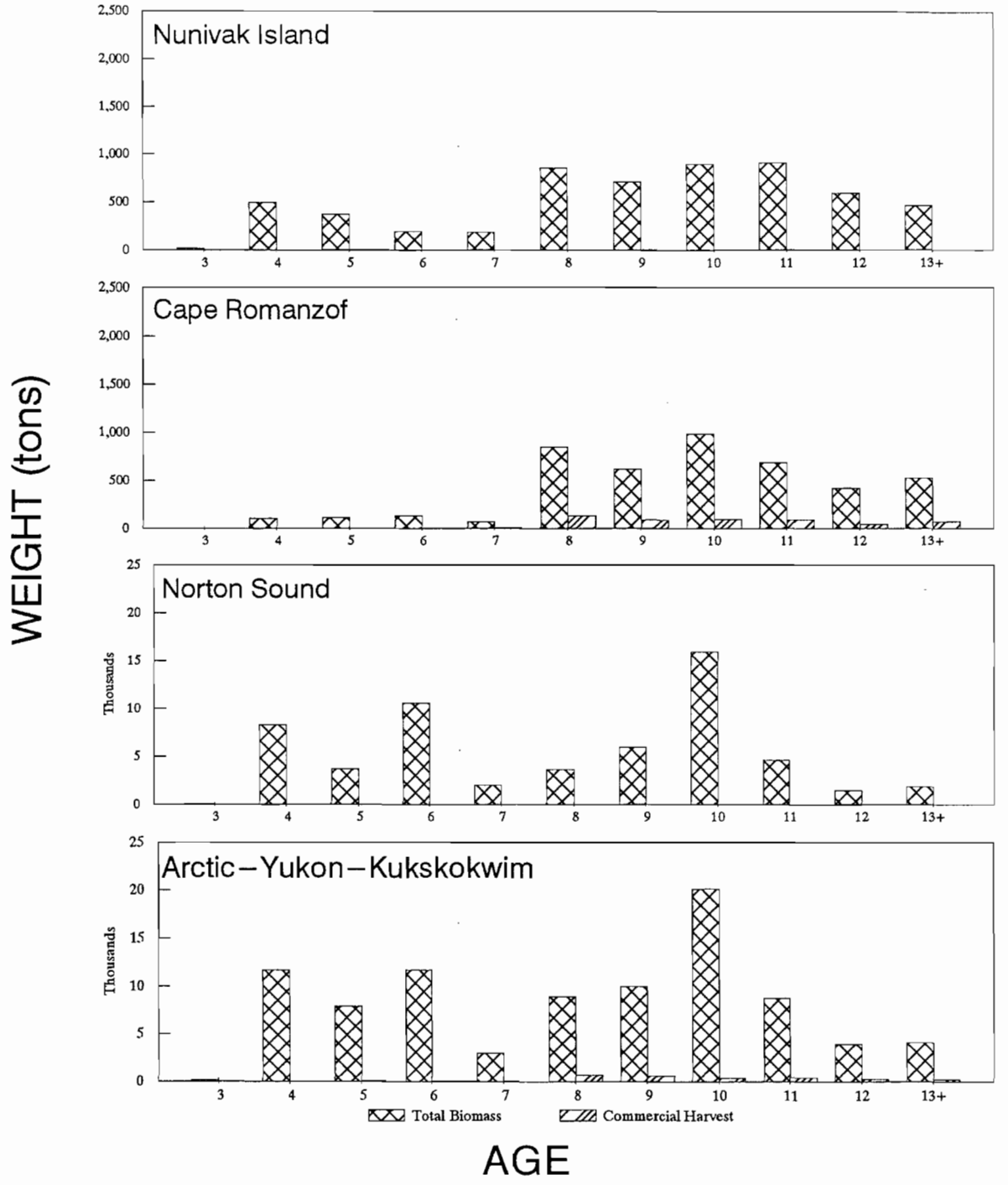

Figure 6. Age composition of Pacific herring run and harvest for the Nunivak Island, Cape Romanzof, Norton Sound Districts, and the Arctic–Yukon–Kuskokwim Region combined, Alaska, 1992.

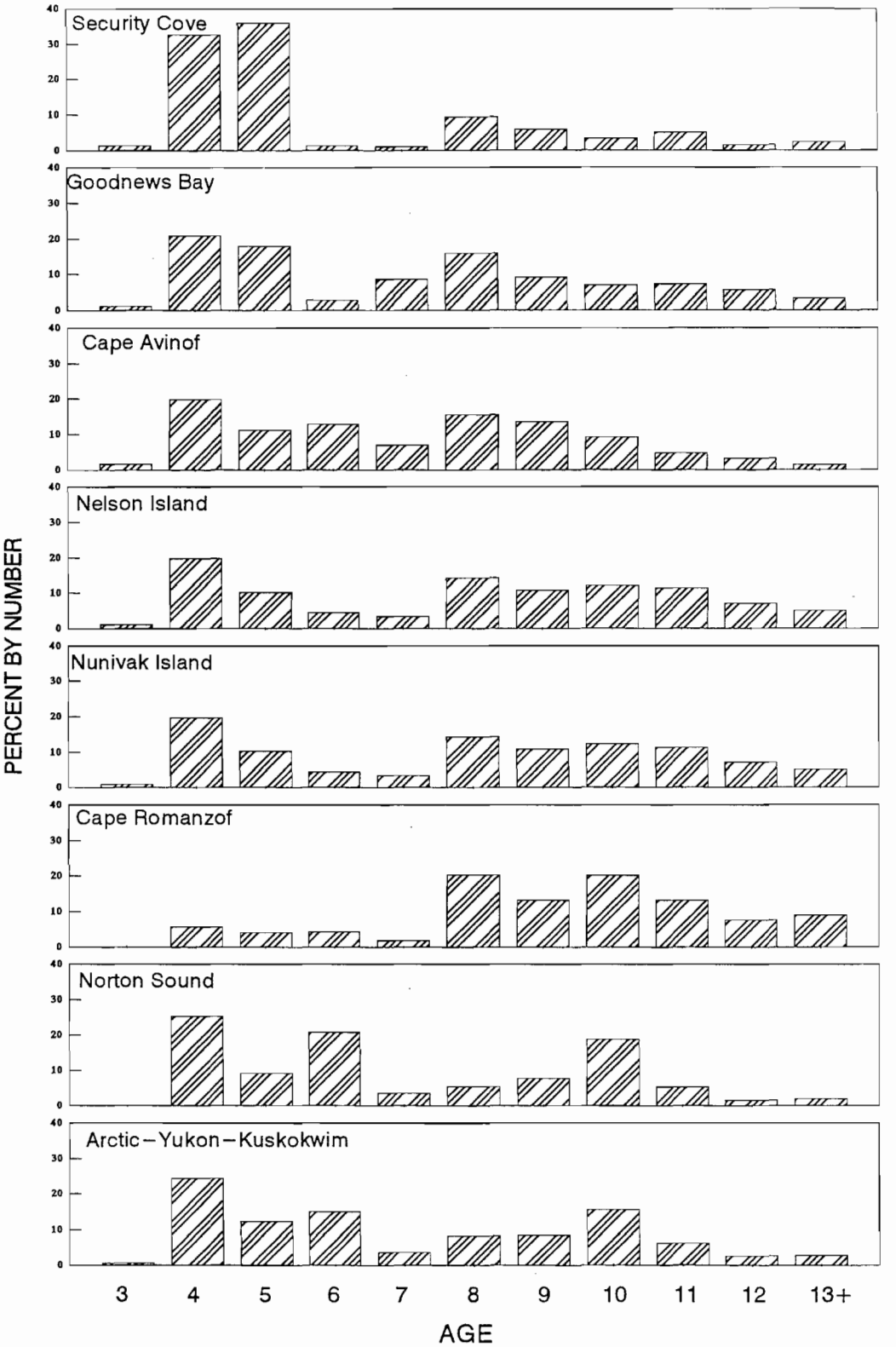

Figure 7. Age composition of Pacific herring spawning populations for commercial fishing districts within the Arctic–Yukon–Kuskokwim Region, Alaska, 1992.

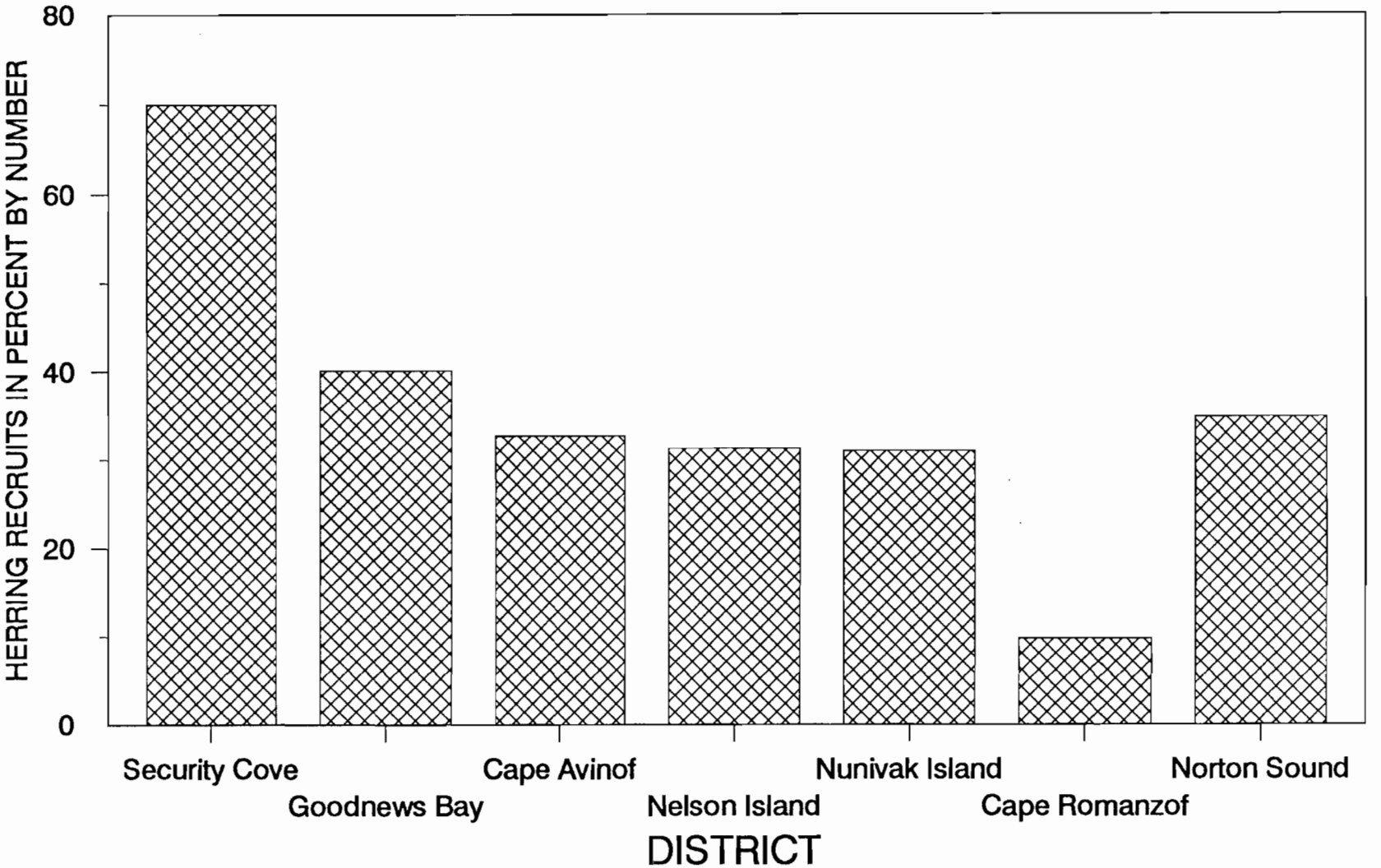

Figure 8. Pacific herring recruits (ages 3, 4, and 5) for commercial fishing districts within the Arctic-Yukon-Kuskokwim Region, Alaska 1992.

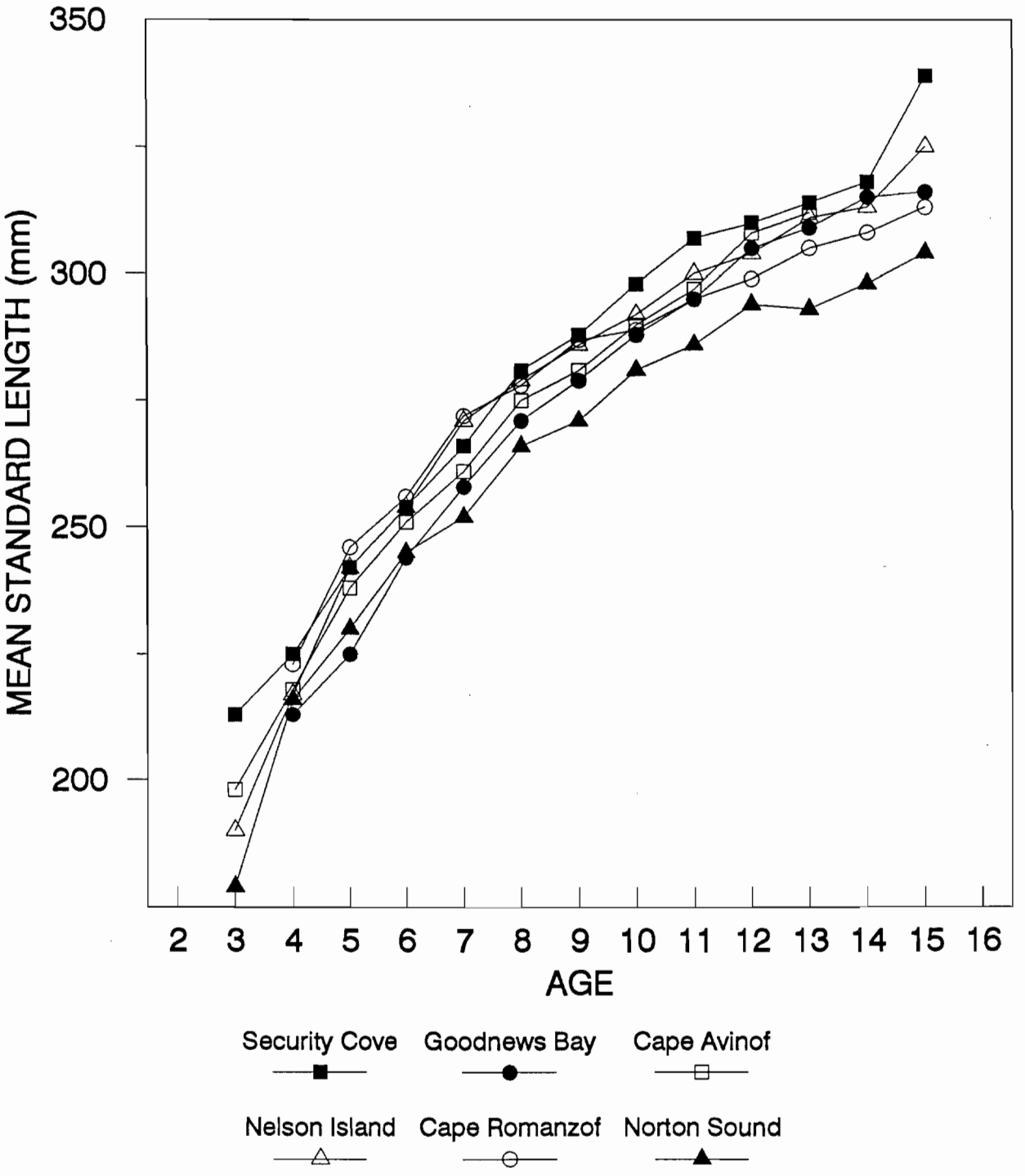

Figure 9. Mean standard length of sampled Pacific herring by age class and commercial fishing district, Arctic-Yukon-Kuskowim Region, Alaska, 1992.

Appendix A. (p. 1 of 2)

MEMORANDUM State of Alaska

TO: Charlie Lean
Area Management Biologist
Division of Commercial Fisheries
Department of Fish and Game
Nome

DATE: October 19, 1988
FILE NO:
TELEPHONE NO: (907) 267-2379

FROM: Robert Conrad
Biometrician, Region III
Division of Commercial Fisheries
Department of Fish and Game
Anchorage

SUBJECT: Sample Sizes for Age Composition Samples

As a follow-up to our conversation last week in Nome concerning sample sizes for age-sex-size sampling, here are some guidelines to help you develop plans for next season's sampling. First, I must stress that the suggested sample sizes are only for sampling that is conducted to estimate age composition. Other uses of these data (such as for stock composition analysis) require larger sample sizes. Also, to assure you that these numbers have statistical validity, the suggested sample sizes are from the following paper: "Thompson, S. K. 1987. Sample size for estimating multinomial proportions. The American Statistician 41(1):42-46". The methods used to derive these suggested sample sizes have been accepted by nearly all biometricians in the Department.

To determine the sample size desired for a particular time and/or area stratum, you first must decide what level of accuracy and precision you want for your age composition estimate. For example, you might want the estimated age composition to be within ± 5% (precision) of the true age composition of the stratum 95% of the time (accuracy) i.e., if you repeated the sampling 100 times, 95 of the samples would include the true age composition within ± 5% of the age composition estimated for that sample). For the most commonly used levels of accuracy and precision, the following are the suggested sample sizes (the number of age classes is not important to these numbers):

Precision	Accuracy	Suggested Sample Size
95%	± 5%	510
95%	± 10%	128
90%	± 5%	403
90%	± 10%	101

Lean October 19, 1988

The above numbers need to be increased to account for scale regeneration and other sources which cause a scale to be non-readable. So, if commonly 15% of the scales collected from a particular fishery cannot be read, the suggested sample size would be increased by 15%. For fisheries (or escapements) which are not the subject of allocation issues but for which the age composition estimates are used for management decisions, I would recommend 95% accuracy with ± 10% precision for each time and/or area stratum.

One word of caution on these sample sizes: because they are usually substantially smaller than the previous goals, it is important that the sampling procedure used to collect the scales is a random process. With the larger sample sizes, it was usually necessary to sample more than one delivery (or test net catch) to obtain the desired sample size, thereby getting some randomness by default. With these smaller numbers, it might be tempting to collect all the scales from a single delivery or catch. I cannot stress the importance of designing your sampling so that a random sample of the entire catch or escapement for a time and/or stratum is collected.

If there are any questions, please contact me.

CC. R. Randall
R. Cannon
L. Buklis
H. Hamner
S. Merkouris

Appendix B.1. Age, sex, and size composition of herring sampled from the commercial gillnet harvest, Security Cove District, 1992.

Sample Period	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
25 May	3											
	4											
	5											
	6											
	7	0	1	0	1	2.7	368		1	273		1
	8	2	6	0	8	21.6	353	57.9	8	288	20.1	8
	9	5	4	0	9	24.3	377	22.0	9	291	5.5	9
	10	5	2	0	7	18.9	381	39.6	7	294	14.0	7
	11	4	3	0	7	18.9	436	27.3	7	309	6.1	7
	12	1	2	0	3	8.1	498	45.1	3	327	4.9	3
	13	1	1	0	2	5.4	427	29.7	2	314	5.7	2
	14											
	15											
	16											
	17											
Sample Total		18	19	0	37	100.0	396	55.6	37	298	16.9	37
27 May	3											
	4											
	5	0	5	0	5	2.5	245	13.5	5	266	3.2	5
	6	1	2	0	3	1.5	240	20.3	3	267	0.6	3
	7	1	2	0	3	1.5	284	36.7	3	276	5.1	3
	8	19	20	0	39	19.2	337	41.6	39	288	7.5	39
	9	26	26	0	52	25.6	369	40.9	52	296	9.9	52
	10	17	10	0	27	13.3	402	49.0	27	302	8.4	27
	11	18	16	0	34	16.7	420	49.3	34	310	10.3	34
	12	13	9	0	22	10.8	428	60.2	22	318	11.9	22
	13	3	11	0	14	6.9	439	39.0	14	323	8.0	14
	14	1	1	0	2	1.0	431	7.1	2	326	4.2	2
	15	0	2	0	2	1.0	497	154.1	2	334	1.4	2
	16											
	17											
Sample Total		99	104	0	203	100.0	383	65.7	203	301	16.5	203
28 May	3											
	4											
	5	0	1	0	1	0.7	250		1	253		1
	6	1	3	0	4	2.7	249	22.9	4	257	9.3	4
	7	6	3	0	9	6.1	325	49.7	9	276	13.5	9
	8	20	23	0	43	29.3	340	41.8	43	283	9.8	43
	9	15	17	0	32	21.8	372	49.2	32	291	8.8	32
	10	16	6	0	22	15.0	406	57.2	22	300	7.6	22
	11	14	9	0	23	15.6	409	41.8	23	304	11.4	23
	12	5	2	0	7	4.8	461	49.9	7	314	9.2	7
	13	4	1	0	5	3.4	442	14.4	5	319	2.9	5
	14	0	1	0	1	0.7	436		1	318		1
	15											
	16											
	17											
Sample Total		81	66	0	147	100.0	374	62.6	147	292	15.9	147

-Continued-

Appendix B.1. (p. 2 of 2)

Sample Period	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
	3											
	4											
	5	0	6	0	6	1.6	246	12.2	6	264	6.2	6
	6	2	5	0	7	1.8	245	20.6	7	261	8.4	7
	7	7	6	0	13	3.4	319	49.0	13	276	11.3	13
All Periods Combined	8	41	49	0	90	23.3	340	43.0	90	286	10.3	90
25-28 May	9	46	47	0	93	24.0	371	42.3	93	294	9.4	93
	10	38	18	0	56	14.5	401	51.1	56	300	9.2	56
	11	36	28	0	64	16.5	418	44.9	64	308	10.6	64
	12	19	13	0	32	8.3	442	60.0	32	318	11.2	32
	13	8	13	0	21	5.4	438	33.0	21	321	7.3	21
	14	1	2	0	3	0.8	433	5.8	3	323	5.5	3
	15	0	2	0	2	0.5	497	154.1	2	334	1.4	2
	16											
	17											
All Samples Combined		198	189	0	387	100.0	381	63.8	387	297	16.8	387
Sex Composition (%)		51.2	48.8									
Not Aged		17	8	0	25	6.5	380	69.8	25	292	25.8	25
Sex Composition (%)		68.0	32.0									

Appendix B.2. Age, sex, and size composition of herring sampled from the commercial gillnet harvest, Goodnews Bay District, 1992.

Sample Period	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
29 May	3											
	4											
	5	4	10	0	14	7.2	234	20.4	14	251	7.0	14
	6	1	5	0	6	3.1	242	40.8	6	257	11.3	6
	7	3	1	0	4	2.1	288	35.8	4	268	12.9	4
	8	29	31	0	60	30.9	323	49.0	60	277	11.6	60
	9	23	19	0	42	21.6	357	52.0	42	285	10.5	42
	10	5	5	0	10	5.2	372	49.4	10	296	12.5	10
	11	20	13	0	33	17.0	415	45.0	33	302	10.2	33
	12	10	6	0	16	8.2	444	49.5	16	306	6.8	16
	13	4	4	0	8	4.1	462	59.9	8	307	9.1	8
	14											
	15	1	0	0	1	0.5	396		1	304		1
	16											
	17											
Sample Total		100	94	0	194	100.0	355	76.2	194	285	18.9	194
30 May	3											
	4											
	5	0	6	0	6	6.0	217	19.5	6	251	11.7	6
	6											
	7	1	4	0	5	5.0	292	44.6	5	269	9.3	5
	8	14	15	0	29	29.0	349	58.1	29	283	12.4	29
	9	10	12	0	22	22.0	365	47.5	22	290	7.6	22
	10	3	2	0	5	5.0	358	49.1	5	289	11.9	5
	11	10	3	0	13	13.0	402	65.3	13	299	9.4	13
	12	5	6	0	11	11.0	473	71.7	11	312	8.9	11
	13	6	1	0	7	7.0	445	26.4	7	313	8.8	7
	14	0	1	0	1	1.0	536		1	326		1
	15	1	0	0	1	1.0	388		1	320		1
	16											
	17											
Sample Total		50	50	0	100	100.0	372	81.0	100	291	18.7	100
31 May	3											
	4											
	5	1	0	0	1	1.2	266		1	252		1
	6	1	3	0	4	4.8	264	17.5	4	263	4.1	4
	7	2	3	0	5	6.0	244	19.3	5	269	8.7	5
	8	12	12	0	24	28.9	331	46.1	24	282	7.8	24
	9	12	8	0	20	24.1	366	45.3	20	289	9.3	20
	10	6	3	0	9	10.8	396	63.9	9	295	11.0	9
	11	6	2	0	8	9.6	418	28.7	8	305	12.7	8
	12	4	5	0	9	10.8	435	83.1	9	311	11.3	9
	13	1	2	0	3	3.6	494	29.5	3	316	7.1	3
	14											
	15											
	16											
	17											
Sample Total		45	38	0	83	100.0	363	75.1	83	290	16.7	83

-Continued-

Appendix B.2. (p. 2 of 2)

Sample Period	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
	3											
	4											
	5	5	16	0	21	5.6	231	22.2	21	251	8.1	21
	6	2	8	0	10	2.7	251	34.0	10	259	9.2	10
	7	6	8	0	14	3.7	273	39.3	14	268	9.4	14
All Periods Combined	8	55	58	0	113	30.0	331	51.6	113	280	11.4	113
29-31 May	9	45	39	0	84	22.3	361	48.9	84	287	9.8	84
	10	14	10	0	24	6.4	378	55.0	24	294	11.6	24
	11	36	18	0	54	14.3	412	48.3	54	302	10.4	54
	12	19	17	0	36	9.5	450	65.9	36	309	9.0	36
	13	11	7	0	18	4.8	461	46.1	18	311	9.0	18
	14	0	1	0	1	0.3	536		1	326		1
	15	2	0	0	2	0.5	392	5.7	2	312	11.3	2
	16											
	17											
All Samples Combined		195	182	0	377	100.0	361	77.4	377	288	18.5	377
Sex Composition (%)		51.7	48.3									
Not Aged		26	21	0	47	12.5	368	67.6	47	291	16.7	47
Sex Composition (%)		55.3	44.7									

Appendix B.3. Age, sex, and size composition of herring sampled from the commercial gillnet harvest, Cape Avinof District, 1992.

Sample Period	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
4 June	3											
	4	0	1	0	1	0.7	138		1	222		1
	5	0	1	0	1	0.7	224		1	250		1
	6	1	12	0	13	8.6	242	26.1	13	256	8.7	13
	7	5	8	0	13	8.6	296	39.8	13	268	8.4	13
	8	19	41	0	60	39.5	301	32.4	60	272	7.9	60
	9	8	20	0	28	18.4	339	33.5	28	282	6.2	28
	10	4	8	0	12	7.9	374	52.4	12	290	9.5	12
	11	5	11	0	16	10.5	437	57.3	16	303	10.8	16
	12	1	4	0	5	3.3	456	34.4	5	308	7.4	5
	13	1	2	0	3	2.0	515	85.6	3	321	6.0	3
	14											
	15											
	16											
	17											
Sample Total		44	108	0	152	100.0	330	73.9	152	279	17.4	152
5 June	3											
	4											
	5											
	6	1	4	0	5	3.4	216	26.3	5	253	9.1	5
	7	4	4	0	8	5.5	287	21.7	8	272	5.4	8
	8	20	21	0	41	28.1	298	38.5	41	279	9.0	41
	9	15	15	0	30	20.5	327	42.0	30	286	10.0	30
	10	16	8	0	24	16.4	348	46.5	24	292	8.6	24
	11	9	13	0	22	15.1	376	58.4	22	302	12.1	22
	12	6	6	0	12	8.2	407	39.4	12	308	11.9	12
	13	0	3	0	3	2.1	419	100.7	3	310	10.0	3
	14	1	0	0	1	0.7	354		1	292		1
	15											
	16											
	17											
Sample Total		72	74	0	146	100.0	332	61.4	146	288	15.8	146
6 June	3											
	4											
	5	1	0	0	1	0.5	172		1	246		1
	6	1	4	0	5	2.5	239	51.7	5	256	10.1	5
	7	6	7	0	13	6.6	258	47.7	13	269	8.7	13
	8	24	31	0	55	27.8	313	46.6	55	282	11.2	55
	9	19	28	0	47	23.7	338	49.0	47	289	12.2	47
	10	21	15	0	36	18.2	358	42.5	36	298	9.0	36
	11	13	9	0	22	11.1	384	53.8	22	302	7.8	22
	12	9	4	0	13	6.6	407	62.6	13	309	13.2	13
	13	3	3	0	6	3.0	465	90.6	6	323	13.4	6
	14											
	15											
	16											
	17											
Sample Total		97	101	0	198	100.0	340	67.2	198	290	16.8	198

-Continued-

Appendix B.3. (p. 2 of 2)

Sample Period	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
All Periods Combined 4- 6 June	3											
	4	0	1	0	1	0.2	138		1	222		1
	5	1	1	0	2	0.4	198	36.8	2	248	2.8	2
	6	3	20	0	23	4.6	236	33.1	23	255	8.7	23
	7	15	19	0	34	6.9	279	42.5	34	269	7.9	34
	8	63	93	0	156	31.5	304	39.8	156	277	10.3	156
	9	42	63	0	105	21.2	335	43.3	105	286	10.5	105
	10	41	31	0	72	14.5	357	45.8	72	295	9.4	72
	11	27	33	0	60	12.1	395	61.2	60	302	10.2	60
	12	16	14	0	30	6.0	415	52.2	30	308	11.5	30
	13	4	8	0	12	2.4	466	90.3	12	319	11.8	12
	14	1	0	0	1	0.2	354		1	292		1
	15											
	16											
	17											
All Samples Combined		213	283	0	496	100.0	335	67.7	496	286	17.4	496
Sex Composition (%)		42.9	57.1									
Not Aged		15	17	0	32	6.5	349	76.3	32	290	17.6	32
Sex Composition (%)		46.9	53.1									

Appendix B.4. Age, sex, and size composition of herring sampled from the commercial gillnet harvest, Nelson Island District, 1992.

Sample Period	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
10 June	3											
	4											
	5	1	0	0	1	0.6	236		1	250		1
	6	0	3	0	3	1.9	239	16.0	3	256	4.0	3
	7	3	4	0	7	4.5	289	26.7	7	275	9.0	7
	8	18	14	0	32	20.6	323	39.5	32	281	9.3	32
	9	17	18	0	35	22.6	330	40.8	35	286	10.6	35
	10	23	14	0	37	23.9	359	49.4	37	295	10.2	37
	11	6	9	0	15	9.7	406	65.8	15	302	12.8	15
	12	8	3	0	11	7.1	374	55.7	11	300	6.2	11
	13	7	4	0	11	7.1	428	72.7	11	309	14.2	11
	14	3	0	0	3	1.9	416	113.9	3	312	4.4	3
	15											
	16											
	17											
Sample Total		86	69	0	155	100.0	351	63.3	155	291	15.0	155
11 June	3											
	4											
	5											
	6	1	4	0	5	1.9	258	11.3	5	263	4.1	5
	7	3	5	0	8	3.1	287	25.3	8	274	9.3	8
	8	22	23	0	45	17.5	305	34.6	45	278	9.6	45
	9	22	23	0	45	17.5	333	49.2	45	290	11.7	45
	10	26	27	0	53	20.6	351	53.5	53	293	11.8	53
	11	24	21	0	45	17.5	379	58.8	45	301	11.8	45
	12	15	13	0	28	10.9	410	73.9	28	306	12.1	28
	13	12	4	0	16	6.2	416	93.0	16	306	13.0	16
	14	3	6	0	9	3.5	488	58.9	9	315	6.5	9
	15	2	1	0	3	1.2	447	88.1	3	323	7.6	3
	16											
	17											
Sample Total		130	127	0	257	100.0	357	72.9	257	294	16.1	257
All Periods Combined 10-11 June	3											
	4											
	5	1	0	0	1	0.2	236		1	250		1
	6	1	7	0	8	1.9	251	15.8	8	260	5.4	8
	7	6	9	0	15	3.6	288	25.0	15	274	8.8	15
	8	40	37	0	77	18.7	312	37.6	77	279	9.6	77
	9	39	41	0	80	19.4	332	45.5	80	288	11.3	80
	10	49	41	0	90	21.8	354	51.7	90	294	11.2	90
	11	30	30	0	60	14.6	386	61.2	60	302	11.9	60
	12	23	16	0	39	9.5	400	70.5	39	304	11.1	39
	13	19	8	0	27	6.6	421	84.1	27	307	13.3	27
	14	6	6	0	12	2.9	470	77.1	12	315	6.0	12
	15	2	1	0	3	0.7	447	88.1	3	323	7.6	3
	16											
	17											
All Samples Combined		216	196	0	412	100.0	355	69.5	412	292	15.8	412
Sex Composition (%)		52.4	47.6									
Not Aged		15	20	0	35	8.5	326	65.9	35	287	18.7	35
Sex Composition (%)		42.9	57.1									

Appendix B.5. Age, sex, and size composition of herring sampled from the subsistence gillnet harvest, Nelson Island District, 1992.

Sample Period	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
6 June	3											
	4	6	13	0	19	38.0	161	35.0	19	228	7.7	19
	5	5	11	0	16	32.0	187	42.8	16	243	8.8	16
	6	0	1	0	1	2.0	206		1	240		1
	7	2	2	0	4	8.0	245	25.4	4	262	9.3	4
	8	4	2	0	6	12.0	276	20.7	6	274	6.6	6
	9	0	2	0	2	4.0	319	86.3	2	283	24.7	2
	10	0	1	0	1	2.0	440		1	305		1
	11	0	1	0	1	2.0	398		1	295		1
	12											
	13											
	14											
	15											
	16											
	17											
Sample Total		17	33	0	50	100.0	207	72.6	50	246	22.3	50
15 June	3	0	1	0	1	2.1	146		1	223		1
	4	15	11	0	26	55.3	161	20.8	26	227	6.6	26
	5	8	9	0	17	36.2	174	21.7	17	235	8.9	17
	6	1	2	0	3	6.4	175	28.1	3	232	12.5	3
	7											
	8											
	9											
	10											
	11											
	12											
	13											
	14											
	15											
	16											
	17											
Sample Total		24	23	0	47	100.0	166	22.0	47	230	8.6	47
All Periods Combined 6-15 June	3	0	1	0	1	1.0	146		1	223		1
	4	21	24	0	45	46.4	161	27.3	45	227	7.0	45
	5	13	20	0	33	34.0	180	33.8	33	239	9.5	33
	6	1	3	0	4	4.1	183	27.8	4	234	10.9	4
	7	2	2	0	4	4.1	245	25.4	4	262	9.3	4
	8	4	2	0	6	6.2	276	20.7	6	274	6.6	6
	9	0	2	0	2	2.1	319	86.3	2	283	24.7	2
	10	0	1	0	1	1.0	440		1	305		1
	11	0	1	0	1	1.0	398		1	295		1
	12											
	13											
	14											
	15											
	16											
	17											
All Samples Combined		41	56	0	97	100.0	187	57.9	97	238	18.7	97
Sex Composition (%)		42.3	57.7									
Not Aged		2	1	0	3	3.1	171	10.1	3	230	4.0	3
Sex Composition (%)		66.7	33.3									

Appendix B.6. Age, sex, and size composition of herring sampled from the commercial gillnet harvest, Cape Romanzof District, 1992.

Sample Period	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
9 June	3											
	4											
	5											
	6	1	2	0	3	1.5	247	18.0	3	252	3.8	3
	7	0	1	0	1	0.5	252		1	271		1
	8	31	19	0	50	25.8	319	30.5	50	273	8.6	50
	9	22	14	0	36	18.6	331	63.1	36	278	7.8	36
	10	28	14	0	42	21.6	370	38.9	42	283	8.8	42
	11	20	12	1	33	17.0	373	76.0	33	290	8.5	33
	12	7	5	0	12	6.2	397	58.1	12	292	11.7	12
	13	9	1	0	10	5.2	438	64.9	10	299	11.4	10
	14	4	1	0	5	2.6	451	78.9	5	301	18.8	5
	15	2	0	0	2	1.0	445	73.5	2	300	8.5	2
	16											
	17											
Sample Total		124	69	1	194	100.0	355	66.1	194	282	12.7	194
12 June	3											
	4											
	5											
	6	1	0	0	1	0.5	299		1	268		1
	7	2	1	0	3	1.4	276	54.0	3	273	12.7	3
	8	34	27	0	61	29.5	311	41.8	61	281	9.6	61
	9	15	19	0	34	16.4	338	36.4	34	284	9.2	34
	10	8	20	0	28	13.5	351	29.6	28	291	6.4	28
	11	18	16	0	34	16.4	371	48.9	34	293	10.8	34
	12	7	11	0	18	8.7	399	57.7	18	301	7.5	18
	13	10	7	0	17	8.2	407	72.1	17	305	13.3	17
	14	8	2	0	10	4.8	424	66.9	10	304	11.4	10
	15	1	0	0	1	0.5	455		1	309		1
	16											
	17											
Sample Total		104	103	0	207	100.0	352	59.6	207	290	13.0	207
All Periods Combined 9-12 June	3											
	4											
	5											
	6	2	2	0	4	1.0	260	29.7	4	256	8.7	4
	7	2	2	0	4	1.0	270	45.7	4	273	10.4	4
	8	65	46	0	111	27.7	314	37.2	111	278	10.0	111
	9	37	33	0	70	17.5	334	51.6	70	281	9.0	70
	10	36	34	0	70	17.5	362	36.4	70	286	8.9	70
	11	38	28	1	67	16.7	372	63.2	67	291	9.8	67
	12	14	16	0	30	7.5	398	56.9	30	297	10.4	30
	13	19	8	0	27	6.7	418	69.9	27	303	12.8	27
	14	12	3	0	15	3.7	433	69.6	15	303	13.7	15
	15	3	0	0	3	0.7	448	52.3	3	303	7.9	3
	16											
	17											
All Samples Combined		228	172	1	401	100.0	354	62.8	401	286	13.4	401
Sex Composition (%)		57.0	43.0									
Not Aged		16	7	0	23	5.7	370	70.1	23	287	14.8	23
Sex Composition (%)		69.6	30.4									

Appendix B.7. Age, sex, and size composition of herring sampled from the variable-mesh gillnet catches, Security Cove District, 1992.

Sample Week	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
13 - 19 May	3	1	2	0	3	3.1	118	5.3	3	222	7.4	3
	4	23	28	0	51	52.0	134	26.2	51	225	7.4	51
	5	17	18	1	36	36.7	173	36.6	36	240	7.6	36
	6	0	1	0	1	1.0	208		1	248		1
	7	1	0	0	1	1.0	243		1	271		1
	8	3	0	0	3	3.1	345	42.0	3	283	3.8	3
	9											
	10	0	1	0	1	1.0	406		1	317		1
	11	0	1	0	1	1.0	400		1	325		1
	12											
	13	1	0	0	1	1.0	450		1	314		1
	14											
	15											
	16											
	17											
Sample Total		46	51	1	98	100.0	165	67.7	98	236	20.4	98
20 - 26 May	3	3	1	0	4	0.8	100	23.7	4	209	4.3	4
	4	49	66	0	115	22.5	148	27.4	115	226	8.2	115
	5	94	71	1	166	32.4	196	35.7	166	245	11.2	166
	6	5	6	0	11	2.1	223	34.5	11	255	9.6	11
	7	4	3	0	7	1.4	259	46.2	7	265	14.6	7
	8	40	25	0	65	12.7	331	49.6	65	282	9.5	65
	9	22	21	0	43	8.4	365	48.8	43	288	10.0	43
	10	12	12	0	24	4.7	421	56.7	24	298	10.4	24
	11	27	16	0	43	8.4	446	56.7	43	307	10.7	43
	12	6	5	0	11	2.1	465	61.6	11	308	8.7	11
	13	10	9	0	19	3.7	484	51.0	19	314	9.4	19
	14	2	1	0	3	0.6	573	82.8	3	318	12.5	3
	15	1	0	0	1	0.2	530		1	339		1
	16											
	17											
Sample Total		275	236	1	512	100.0	268	123.6	512	262	31.9	512
27 May - 2 June	3	5	1	0	6	1.7	115	27.6	6	212	13.5	6
	4	92	57	0	149	42.1	133	18.6	149	224	7.4	149
	5	88	57	0	145	41.0	168	24.8	145	240	9.5	145
	6	1	0	0	1	0.3	220		1	260		1
	7	1	1	0	2	0.6	244	31.1	2	266	11.3	2
	8	13	9	0	22	6.2	288	37.8	22	278	8.7	22
	9	7	7	0	14	4.0	312	59.3	14	290	10.0	14
	10	4	3	0	7	2.0	368	37.6	7	298	9.0	7
	11	4	1	0	5	1.4	386	39.2	5	303	8.4	5
	12	3	0	0	3	0.8	454	77.1	3	319	8.5	3
	13											
	14											
	15											
	16											
	17											
Sample Total		218	136	0	354	100.0	176	71.5	354	240	23.8	354

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Appendix B.7. (p. 2 of 2)

Sample Week	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
All Weeks Combined 13 May - 2 June	3	9	4	0	13	1.3	111	23.0	13	213	10.8	13
	4	164	151	0	315	32.7	138	24.3	315	225	7.8	315
	5	199	146	2	347	36.0	182	34.4	347	242	10.6	347
	6	6	7	0	13	1.3	222	31.8	13	254	9.1	13
	7	6	4	0	10	1.0	255	39.8	10	266	12.6	10
	8	56	34	0	90	9.3	321	50.1	90	281	9.3	90
	9	29	28	0	57	5.9	352	56.1	57	288	10.0	57
	10	16	16	0	32	3.3	409	56.2	32	298	10.3	32
	11	31	18	0	49	5.1	439	57.6	49	307	10.7	49
	12	9	5	0	14	1.5	463	62.1	14	310	9.5	14
	13	11	9	0	20	2.1	482	50.2	20	314	9.2	20
	14	2	1	0	3	0.3	573	82.8	3	318	12.5	3
	15	1	0	0	1	0.1	530		1	339		1
	16											
	17											
All Samples Combined		539	423	2	964	100.0	224	112.7	964	251	30.3	964
Sex Composition (%)		56.0	44.0									
Not Aged		25	17	0	42	4.4	331	118.1	42	280	30.5	42
Sex Composition (%)		59.5	40.5									

Appendix B.8. Age, sex, and size composition of herring sampled from the variable-mesh gillnet catches, Goodnews Bay District, 1992.

Sample Week	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
13 - 19 May	3											
	4											
	5											
	6											
	7											
	8	0	1	0	1	100.0	296		1	278		1
	9											
	10											
	11											
	12											
	13											
	14											
	15											
	16											
	17											
Sample Total		0	1	0	1	100.0	296		1	278		1
20 - 26 May	3	1	1	0	2	0.3	138	22.6	2	217	9.9	2
	4	48	34	0	82	12.6	155	24.3	82	225	8.7	82
	5	65	61	0	126	19.3	204	32.6	126	243	10.1	126
	6	13	8	0	21	3.2	241	62.2	21	259	10.2	21
	7	12	18	0	30	4.6	297	47.6	30	270	11.3	30
	8	65	57	0	122	18.7	340	51.7	122	278	11.3	122
	9	53	23	0	76	11.7	376	56.3	76	288	11.4	76
	10	37	20	0	57	8.7	422	54.8	57	296	10.1	57
	11	39	22	0	61	9.4	455	62.4	61	304	10.6	61
	12	29	17	0	46	7.1	481	69.5	46	309	11.8	46
	13	12	14	0	26	4.0	497	83.3	26	315	9.5	26
	14	2	1	0	3	0.5	461	35.1	3	312	6.7	3
	15											
	16											
	17											
Sample Total		376	276	0	652	100.0	324	123.2	652	272	30.5	652
27 May - 2 June	3	3	0	0	3	2.0	119	14.0	3	211	3.8	3
	4	16	16	0	32	21.3	150	17.9	32	225	7.9	32
	5	30	24	0	54	36.0	211	28.2	54	248	8.9	54
	6	1	0	0	1	0.7	196		1	252		1
	7	1	5	0	6	4.0	280	18.9	6	280	7.5	6
	8	15	5	0	20	13.3	314	35.2	20	280	10.9	20
	9	8	5	0	13	8.7	362	24.2	13	291	7.1	13
	10	5	1	0	6	4.0	381	85.3	6	288	9.2	6
	11	6	3	0	9	6.0	429	67.7	9	309	7.5	9
	12	3	2	0	5	3.3	460	63.9	5	310	9.1	5
	13											
	14	1	0	0	1	0.7	440		1	326		1
	15											
	16											
	17											
Sample Total		89	61	0	150	100.0	255	101.2	150	260	29.7	150

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Appendix B.8. (p. 2 of 2)

Sample Week	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
All Weeks Combined 13 May - 2 June	3	4	1	0	5	0.6	127	18.2	5	213	6.6	5
	4	64	50	0	114	14.2	153	22.7	114	225	8.5	114
	5	95	85	0	180	22.4	206	31.4	180	244	10.1	180
	6	14	8	0	22	2.7	239	61.5	22	258	10.0	22
	7	13	23	0	36	4.5	294	44.3	36	271	11.3	36
	8	80	63	0	143	17.8	336	50.3	143	279	11.2	143
	9	61	28	0	89	11.1	374	53.0	89	288	10.9	89
	10	42	21	0	63	7.8	418	58.7	63	295	10.3	63
	11	45	25	0	70	8.7	452	63.2	70	305	10.4	70
	12	32	19	0	51	6.4	479	68.7	51	309	11.5	51
	13	12	14	0	26	3.2	497	83.3	26	315	9.5	26
	14	3	1	0	4	0.5	456	30.6	4	316	8.7	4
	15											
	16											
	17											
All Samples Combined		465	338	0	803	100.0	311	122.2	803	270	30.7	803
Sex Composition (%)		57.9	42.1									
Not Aged		62	44	0	106	13.2	355	121.0	106	280	29.5	106
Sex Composition (%)		58.5	41.5									

Appendix B.9. Age, sex, and size composition of herring sampled from the variable-mesh gillnet catches, Cape Avinof District, 1992.

Sample Week	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
3 - 9 June	3	2	3	0	5	1.0	92	9.2	5	196	3.5	5
	4	53	48	0	101	20.3	136	32.4	101	218	14.2	101
	5	15	27	0	42	8.5	179	31.8	42	238	11.7	42
	6	20	51	0	71	14.3	218	30.9	71	252	9.1	71
	7	13	21	0	34	6.8	237	33.3	34	261	8.8	34
	8	40	40	0	80	16.1	284	38.1	80	274	10.2	80
	9	27	41	0	68	13.7	315	44.5	68	282	10.1	68
	10	21	29	0	50	10.1	344	36.9	50	291	15.5	50
	11	9	17	0	26	5.2	384	61.9	26	295	12.3	26
	12	3	10	0	13	2.6	436	47.6	13	308	9.3	13
	13	3	4	0	7	1.4	412	36.6	7	307	10.4	7
	14											
	15											
	16											
	17											
Sample Total		206	291	0	497	100.0	252	93.6	497	260	30.6	497
10 - 16 June	3	0	1	0	1	0.3	90		1	208		1
	4	25	25	1	51	17.4	138	27.8	51	219	10.7	51
	5	26	16	0	42	14.3	177	32.2	42	238	9.7	42
	6	23	12	0	35	11.9	205	24.9	35	249	9.1	35
	7	9	7	0	16	5.5	258	42.0	16	263	12.8	16
	8	22	25	0	47	16.0	303	38.9	47	277	8.2	47
	9	25	18	0	43	14.7	306	36.2	43	279	8.6	43
	10	12	15	0	27	9.2	358	35.2	27	289	7.5	27
	11	7	6	0	13	4.4	387	53.5	13	300	9.5	13
	12	6	6	0	12	4.1	430	36.1	12	308	6.5	12
	13	2	4	0	6	2.0	463	29.7	6	318	4.1	6
	14											
	15											
	16											
	17											
Sample Total		157	135	1	293	100.0	259	97.2	293	262	29.5	293
All Weeks Combined 3 - 16 June	3	2	4	0	6	0.8	91	8.3	6	198	5.8	6
	4	78	73	1	152	19.2	136	30.8	152	218	13.1	152
	5	41	43	0	84	10.6	178	31.8	84	238	10.7	84
	6	43	63	0	106	13.4	213	29.5	106	251	9.1	106
	7	22	28	0	50	6.3	244	37.1	50	261	10.2	50
	8	62	65	0	127	16.1	291	39.4	127	275	9.6	127
	9	52	59	0	111	14.1	312	41.6	111	281	9.6	111
	10	33	44	0	77	9.7	349	36.7	77	290	13.2	77
	11	16	23	0	39	4.9	385	58.6	39	297	11.5	39
	12	9	16	0	25	3.2	433	41.7	25	308	7.9	25
	13	5	8	0	13	1.6	436	41.5	13	312	9.4	13
	14											
	15											
	16											
	17											
All Samples Combined		363	426	1	790	100.0	254	95.0	790	260	30.2	790
Sex Composition (%)		46.0	54.0									
Not Aged		7	13	0	20	2.5	275	91.6	20	263	27.0	20
Sex Composition (%)		35.0	65.0									

Appendix B.10. Age, sex, and size composition of herring sampled from the variable-mesh gillnet catches, Nelson Island District, 1992.

Sample Week	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
27 May - 2 June	3											
	4											
	5	8	5	0	13	5.1	194	19.6	13	241	8.4	13
	6	6	2	0	8	3.1	234	27.0	8	255	9.1	8
	7	3	3	0	6	2.4	305	29.0	6	270	10.2	6
	8	30	23	0	53	20.8	334	47.9	53	283	10.1	53
	9	28	16	0	44	17.3	354	38.2	44	286	9.1	44
	10	17	19	0	36	14.1	398	56.2	36	293	10.7	36
	11	29	22	0	51	20.0	432	59.0	51	301	9.6	51
	12	14	9	0	23	9.0	448	77.3	23	304	13.8	23
	13	10	9	0	19	7.5	461	65.8	19	311	11.1	19
	14	2	0	0	2	0.8	488	19.1	2	320	14.1	2
	15											
	16											
	17											
Sample Total		147	108	0	255	100.0	376	86.1	255	289	19.3	255
3 - 9 June	3											
	4	29	24	0	53	12.0	151	24.9	53	227	12.6	53
	5	35	23	0	58	13.2	195	38.6	58	244	15.9	58
	6	9	15	0	24	5.4	226	51.5	24	253	13.6	24
	7	12	7	0	19	4.3	292	47.4	19	274	10.8	19
	8	45	29	0	74	16.8	302	40.2	74	277	9.7	74
	9	22	18	0	40	9.1	341	42.4	40	286	10.7	40
	10	31	26	0	57	12.9	381	55.2	57	293	10.7	57
	11	29	20	1	50	11.3	405	62.1	50	299	13.2	50
	12	19	16	0	35	7.9	419	68.3	35	303	11.1	35
	13	8	9	0	17	3.9	471	57.9	17	310	7.3	17
	14	6	8	0	14	3.2	479	53.6	14	312	10.7	14
	15											
	16											
	17											
Sample Total		245	195	1	441	100.0	312	110.1	441	275	29.0	441
10 - 16 June	3	4	6	0	10	2.3	94	25.0	10	201	17.3	10
	4	82	70	0	152	35.1	121	24.3	152	215	9.9	152
	5	22	16	0	38	8.8	177	39.9	38	241	15.0	38
	6	8	14	0	22	5.1	229	45.1	22	256	12.1	22
	7	6	9	0	15	3.5	265	48.4	15	271	13.8	15
	8	24	20	0	44	10.2	284	47.2	44	276	9.6	44
	9	14	22	0	36	8.3	330	76.2	36	286	14.1	36
	10	19	31	0	50	11.5	360	64.4	50	292	11.2	50
	11	15	16	0	31	7.2	391	63.0	31	299	12.0	31
	12	14	10	0	24	5.5	443	65.8	24	307	10.7	24
	13	6	2	0	8	1.8	450	58.8	8	314	7.5	8
	14	2	0	0	2	0.5	383	24.0	2	311	1.4	2
	15	1	0	0	1	0.2	504		1	325		1
	16											
	17											
Sample Total		217	216	0	433	100.0	243	125.1	433	256	38.1	433

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Appendix B.10. (p. 2 of 2)

Sample Week	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
17 - 23 June	3	2	1	0	3	3.0	89	13.6	3	156	52.0	3
	4	21	17	0	38	38.4	130	20.6	38	209	28.6	38
	5	6	11	0	17	17.2	181	33.9	17	238	12.6	17
	6	1	0	0	1	1.0	154		1	240		1
	7	0	2	0	2	2.0	215	24.0	2	255	9.9	2
	8	0	5	0	5	5.1	249	22.1	5	277	5.0	5
	9	7	6	0	13	13.1	291	49.2	13	282	11.4	13
	10	3	4	0	7	7.1	332	30.8	7	286	9.7	7
	11	4	4	0	8	8.1	371	51.0	8	296	9.5	8
	12	4	1	0	5	5.1	345	72.1	5	296	17.1	5
	13											
	14											
	15											
	16											
	17											
Sample Total		48	51	0	99	100.0	211	96.4	99	243	43.6	99
All Weeks Combined 27 May - 23 June	3	6	7	0	13	1.1	93	22.5	13	190	32.6	13
	4	132	111	0	243	19.8	129	26.7	243	217	16.0	243
	5	71	55	0	126	10.3	187	37.5	126	242	14.6	126
	6	24	31	0	55	4.5	227	46.1	55	254	12.4	55
	7	21	21	0	42	3.4	280	48.5	42	271	12.1	42
	8	99	77	0	176	14.3	306	48.8	176	279	10.0	176
	9	71	62	0	133	10.8	337	55.6	133	286	11.3	133
	10	70	80	0	150	12.2	376	59.9	150	292	10.8	150
	11	77	62	1	140	11.4	410	62.8	140	300	11.5	140
	12	51	36	0	87	7.1	429	73.3	87	304	12.1	87
	13	24	20	0	44	3.6	463	60.7	44	311	9.0	44
	14	10	8	0	18	1.5	469	57.0	18	313	10.4	18
	15	1	0	0	1	0.1	504		1	325		1
	16											
	17											
All Samples Combined		657	570	1	1228	100.0	293	123.0	1228	269	35.4	1228
Sex Composition (%)		53.5	46.5									
Not Aged		45	27	0	72	5.9	318	119.4	72	277	32.5	72
Sex Composition (%)		62.5	37.5									

Appendix B.11. Age, sex, and size composition of herring sampled from the variable-mesh gillnet catches, Cape Romanzof District, 1992.

Sample Week	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
3 - 9 June	3											
	4	3	3	0	6	1.3	140	27.6	6	220	9.8	6
	5	8	2	0	10	2.1	198	24.7	10	245	9.1	10
	6	18	11	0	29	6.1	244	37.4	29	256	10.2	29
	7	4	5	1	10	2.1	311	68.9	10	275	15.4	10
	8	67	32	2	101	21.2	316	37.5	100	276	9.6	101
	9	51	18	0	69	14.5	357	42.4	69	285	9.5	69
	10	64	48	1	113	23.7	370	35.4	113	288	8.5	113
	11	37	30	0	67	14.0	389	50.9	67	292	10.9	67
	12	20	13	0	33	6.9	403	45.7	33	295	10.4	33
	13	12	10	0	22	4.6	432	61.0	22	302	12.1	22
	14	8	5	0	13	2.7	439	35.0	13	308	10.0	13
	15	2	2	0	4	0.8	442	83.9	4	301	11.2	4
	16											
	17											
Sample Total		294	179	4	477	100.0	352	70.0	476	283	17.2	477
10 - 16 June	3											
	4	26	21	0	47	10.2	141	21.6	47	223	9.2	47
	5	18	14	0	32	6.9	199	39.4	32	246	18.3	32
	6	7	8	0	15	3.3	223	32.2	15	254	11.1	15
	7	3	4	0	7	1.5	266	30.4	7	266	6.0	7
	8	58	27	0	85	18.4	314	40.2	85	281	10.9	85
	9	30	21	0	51	11.1	355	49.5	51	288	10.7	51
	10	47	38	0	85	18.4	357	43.2	85	291	12.7	85
	11	28	28	0	56	12.1	393	52.3	56	297	11.8	56
	12	21	21	0	42	9.1	423	59.8	42	302	13.0	42
	13	12	12	0	24	5.2	432	60.9	24	306	12.5	24
	14	3	7	0	10	2.2	433	44.2	10	307	10.5	10
	15	0	7	0	7	1.5	515	82.6	7	319	15.4	7
	16											
	17											
Sample Total		253	208	0	461	100.0	328	100.8	461	280	27.7	461
17 - 23 June	3											
	4	9	2	0	11	19.6	138	28.7	11	225	12.0	11
	5	2	2	0	4	7.1	182	17.1	4	246	2.5	4
	6	2	1	0	3	5.4	225	38.2	3	260	15.0	3
	7	3	0	0	3	5.4	268	10.0	3	278	5.8	3
	8	5	2	0	7	12.5	293	38.4	7	281	12.1	7
	9	4	2	0	6	10.7	341	66.3	6	292	14.0	6
	10	5	2	0	7	12.5	329	57.4	7	286	9.9	7
	11	2	3	0	5	8.9	372	33.8	5	302	8.4	5
	12	2	0	0	2	3.6	390	58.7	2	298	3.5	2
	13	3	3	0	6	10.7	406	62.7	6	312	7.5	6
	14	1	1	0	2	3.6	445	22.6	2	318	3.5	2
	15											
	16											
	17											
Sample Total		38	18	0	56	100.0	287	105.6	56	275	31.8	56

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Appendix B.11. (p. 2 of 2)

Sample Week	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
All Weeks Combined 3 - 23 June	3											
	4	38	26	0	64	6.4	140	23.1	64	223	9.7	64
	5	28	18	0	46	4.6	198	35.1	46	246	15.7	46
	6	27	20	0	47	4.7	236	36.5	47	256	10.7	47
	7	10	9	1	20	2.0	289	55.5	20	272	12.4	20
	8	130	61	2	193	19.4	314	38.7	192	278	10.6	193
	9	85	41	0	126	12.7	355	46.3	126	287	10.3	126
	10	116	88	1	205	20.6	364	40.4	205	289	10.6	205
	11	67	61	0	128	12.9	390	50.9	128	295	11.5	128
	12	43	34	0	77	7.7	414	54.5	77	299	12.2	77
	13	27	25	0	52	5.2	429	60.5	52	305	12.1	52
	14	12	13	0	25	2.5	437	37.1	25	308	10.0	25
	15	2	9	0	11	1.1	489	86.9	11	313	16.3	11
	16											
	17											
All Samples Combined		585	405	4	994	100.0	337	89.1	993	282	23.6	994
Sex Composition (%)		59.1	40.9									
Not Aged		36	32	0	68	6.8	345	67.8	68	284	19.2	68
Sex Composition (%)		52.9	47.1									

Appendix B.12. Age, sex, and size composition of herring sampled from the variable-mesh gillnet catches, Unalakleet Subdistrict, Norton Sound District, 1992.

Sample Week	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
3 - 9 June	3											
	4	7	14	0	21	16.4	132	14.5	21	216	7.8	21
	5	3	6	0	9	7.0	164	25.3	9	230	9.3	9
	6	26	12	0	38	29.7	205	22.1	38	244	8.2	38
	7	0	3	0	3	2.3	237	44.6	3	250	9.2	3
	8	3	4	0	7	5.5	273	32.8	7	256	16.9	7
	9	8	2	0	10	7.8	296	44.0	10	265	11.8	10
	10	12	20	0	32	25.0	344	43.2	32	280	10.6	32
	11	1	3	0	4	3.1	379	69.3	4	285	20.1	4
	12	4	0	0	4	3.1	377	23.9	4	289	2.8	4
	13											
	14											
	15											
	16											
	17											
Sample Total		64	64	0	128	100.0	247	88.6	128	252	25.5	128
10 - 16 June	3	1	0	0	1	0.4	48		1	165		1
	4	43	21	0	64	27.9	141	19.1	64	218	7.8	64
	5	18	13	0	31	13.5	167	21.0	31	232	12.2	31
	6	24	26	0	50	21.8	214	29.0	50	246	8.0	50
	7	4	6	0	10	4.4	235	48.0	10	250	13.8	10
	8	7	2	0	9	3.9	283	46.9	9	265	9.7	9
	9	9	12	0	21	9.2	317	40.4	21	273	8.8	21
	10	19	14	0	33	14.4	356	33.2	33	282	6.5	33
	11	6	3	0	9	3.9	363	17.2	9	282	5.1	9
	12	0	1	0	1	0.4	370		1	287		1
	13											
	14											
	15											
	16											
	17											
Sample Total		131	98	0	229	100.0	227	87.5	229	246	25.9	229
24 - 30 June	3	1	1	0	2	1.8	86	17.0	2	187	9.2	2
	4	22	14	0	36	31.9	129	24.0	36	213	8.2	36
	5	7	4	0	11	9.7	144	24.5	11	222	10.2	11
	6	14	7	0	21	18.6	195	25.7	21	242	8.8	21
	7	2	1	0	3	2.7	257	37.5	3	260	8.0	3
	8	4	4	0	8	7.1	262	22.8	8	259	32.9	8
	9	4	1	0	5	4.4	258	83.4	5	253	47.5	5
	10	7	6	0	13	11.5	307	44.4	13	272	33.8	13
	11	1	4	0	5	4.4	380	61.8	5	297	4.0	5
	12	0	1	0	1	0.9	348		1	295		1
	13	0	3	0	3	2.7	364	15.1	3	291	6.7	3
	14	4	1	0	5	4.4	406	14.5	5	300	6.3	5
	15											
	16											
	17											
Sample Total		66	47	0	113	100.0	212	95.6	113	242	34.5	113

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Appendix B.12. (p. 2 of 2)

Sample Week	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
3 - 30 June	3	2	1	0	3	0.6	73	25.0	3	179	14.0	3
	4	72	49	0	121	25.7	136	20.6	121	216	8.1	121
	5	28	23	0	51	10.9	162	24.1	51	230	11.8	51
	6	64	45	0	109	23.2	207	26.9	109	244	8.3	109
	7	6	10	0	16	3.4	240	43.7	16	252	12.2	16
	8	14	10	0	24	5.1	273	35.8	24	260	21.3	24
	9	21	15	0	36	7.7	303	51.4	36	268	19.7	36
	10	38	40	0	78	16.6	343	42.5	78	279	15.9	78
	11	8	10	0	18	3.8	371	44.3	18	287	11.5	18
	12	4	2	0	6	1.3	371	21.8	6	290	3.5	6
	13	0	3	0	3	0.6	364	15.1	3	291	6.7	3
	14	4	1	0	5	1.1	406	14.5	5	300	6.3	5
	15											
	16											
	17											
All Samples Combined		261	209	0	470	100.0	229	90.5	470	247	28.3	470
Sex Composition (%)		55.5	44.5									
Not Aged		8	8	0	16	3.4	209	65.2	16	249	23.7	16
Sex Composition (%)		50.0	50.0									

Appendix B.13. Age, sex, and size composition of herring sampled from the variable-mesh gillnet catches, Cape Denbigh Subdistrict, Norton Sound District, 1992.

Sample Week	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
10 - 16 June	3											
	4	10	8	0	18	9.6	132	15.1	18	210	25.6	18
	5	13	6	0	19	10.1	183	16.0	19	229	24.3	19
	6	18	21	0	39	20.7	216	27.0	39	248	9.1	39
	7	6	2	0	8	4.3	243	25.8	8	254	4.9	8
	8	10	5	0	15	8.0	289	35.2	15	265	8.3	15
	9	11	13	0	24	12.8	323	37.8	24	272	8.5	24
	10	25	30	0	55	29.3	356	38.9	55	281	7.7	55
	11	4	4	0	8	4.3	334	52.3	8	284	8.0	8
	12	1	1	0	2	1.1	458	50.9	2	295	7.1	2
	13											
	14											
	15											
	16											
	17											
Sample Total		98	90	0	188	100.0	274	85.9	188	259	27.0	188
17 - 23 June	3											
	4	75	51	0	126	30.1	133	18.0	126	215	8.2	126
	5	22	10	0	32	7.7	162	33.8	32	230	13.5	32
	6	39	38	0	77	18.4	214	31.7	77	245	9.5	77
	7	4	5	0	9	2.2	225	36.0	9	252	13.6	9
	8	13	9	0	22	5.3	288	48.4	22	271	10.6	22
	9	10	17	0	27	6.5	318	37.8	27	274	8.3	27
	10	31	39	0	70	16.7	355	41.8	70	283	9.2	70
	11	19	11	0	30	7.2	357	47.4	30	286	11.4	30
	12	4	6	0	10	2.4	390	55.8	10	296	10.9	10
	13	4	5	0	9	2.2	389	54.4	9	291	6.3	9
	14	2	2	0	4	1.0	425	51.9	4	298	10.9	4
	15	1	1	0	2	0.5	462	53.7	2	304	4.9	2
	16											
	17											
Sample Total		224	194	0	418	100.0	241	102.6	418	251	30.7	418
24 - 30 June	3											
	4	16	22	0	38	31.4	135	24.9	38	215	8.5	38
	5	4	3	0	7	5.8	171	38.1	7	235	10.4	7
	6	12	10	0	22	18.2	193	26.9	22	244	9.5	22
	7	4	5	0	9	7.4	227	23.5	9	251	9.9	9
	8	2	1	0	3	2.5	256	32.9	3	268	16.1	3
	9	5	1	0	6	5.0	305	59.8	6	275	13.5	6
	10	10	12	0	22	18.2	318	41.4	22	281	7.2	22
	11	2	5	0	7	5.8	348	43.1	7	289	9.8	7
	12											
	13	0	4	0	4	3.3	345	29.2	4	298	10.8	4
	14	1	2	0	3	2.5	377	37.8	3	293	11.2	3
	15											
	16											
	17											
Sample Total		56	65	0	121	100.0	224	88.5	121	249	30.1	121

Appendix B.13. (p. 2 of 2)

Sample Week	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
	3											
	4	101	81	0	182	25.0	133	19.3	182	215	11.2	182
	5	39	19	0	58	8.0	170	30.8	58	230	17.3	58
	6	69	69	0	138	19.0	212	30.6	138	246	9.4	138
	7	14	12	0	26	3.6	231	29.0	26	252	9.9	26
All Weeks Combined	8	25	15	0	40	5.5	286	42.9	40	269	10.3	40
10 - 30 June	9	26	31	0	57	7.8	319	40.0	57	273	8.9	57
	10	66	81	0	147	20.2	350	42.6	147	282	8.4	147
	11	25	20	0	45	6.2	351	47.4	45	286	10.5	45
	12	5	7	0	12	1.7	401	59.1	12	296	10.1	12
	13	4	9	0	13	1.8	375	51.4	13	293	8.2	13
	14	3	4	0	7	1.0	404	49.6	7	296	10.5	7
	15	1	1	0	2	0.3	462	53.7	2	304	4.9	2
	16											
	17											
All Samples Combined		378	349	0	727	100.0	247	97.6	727	253	29.9	727
Sex Composition (%)		52.0	48.0									
Not Aged		3	1	0	4	0.6	164	35.5	4	230	16.7	4
Sex Composition (%)		75.0	25.0									

Appendix B.14. Age, sex, and size composition of herring sampled from the variable-mesh gillnet catches, Norton Sound combined, 1992.

Sample Week	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
3 - 9 June	3											
	4	7	14	0	21	16.4	132	14.5	21	216	7.8	21
	5	3	6	0	9	7.0	164	25.3	9	230	9.3	9
	6	26	12	0	38	29.7	205	22.1	38	244	8.2	38
	7	0	3	0	3	2.3	237	44.6	3	250	9.2	3
	8	3	4	0	7	5.5	273	32.8	7	256	16.9	7
	9	8	2	0	10	7.8	296	44.0	10	265	11.8	10
	10	12	20	0	32	25.0	344	43.2	32	280	10.6	32
	11	1	3	0	4	3.1	379	69.3	4	285	20.1	4
	12	4	0	0	4	3.1	377	23.9	4	289	2.8	4
	13											
	14											
	15											
	16											
	17											
Sample Total		64	64	0	128	100.0	247	88.6	128	252	25.5	128
10 - 16 June	3	1	0	0	1	0.2	48		1	165		1
	4	53	29	0	82	19.7	139	18.6	82	216	14.0	82
	5	31	19	0	50	12.0	173	20.6	50	231	17.6	50
	6	42	47	0	89	21.3	215	28.0	89	247	8.5	89
	7	10	8	0	18	4.3	239	38.9	18	252	10.7	18
	8	17	7	0	24	5.8	287	39.1	24	265	8.6	24
	9	20	25	0	45	10.8	320	38.8	45	272	8.5	45
	10	44	44	0	88	21.1	356	36.6	88	281	7.3	88
	11	10	7	0	17	4.1	349	39.5	17	283	6.5	17
	12	1	2	0	3	0.7	429	62.3	3	292	6.8	3
	13											
	14											
	15											
	16											
	17											
Sample Total		229	188	0	417	100.0	248	89.8	417	252	27.1	417
17 - 23 June	3											
	4	75	51	0	126	30.1	133	18.0	126	215	8.2	126
	5	22	10	0	32	7.7	162	33.8	32	230	13.5	32
	6	39	38	0	77	18.4	214	31.7	77	245	9.5	77
	7	4	5	0	9	2.2	225	36.0	9	252	13.6	9
	8	13	9	0	22	5.3	288	48.4	22	271	10.6	22
	9	10	17	0	27	6.5	318	37.8	27	274	8.3	27
	10	31	39	0	70	16.7	355	41.8	70	283	9.2	70
	11	19	11	0	30	7.2	357	47.4	30	286	11.4	30
	12	4	6	0	10	2.4	390	55.8	10	296	10.9	10
	13	4	5	0	9	2.2	389	54.4	9	291	6.3	9
	14	2	2	0	4	1.0	425	51.9	4	298	10.9	4
	15	1	1	0	2	0.5	462	53.7	2	304	4.9	2
	16											
	17											
Sample Total		224	194	0	418	100.0	241	102.6	418	251	30.7	418

-Continued-

Appendix B.14. (p. 2 of 2)

Sample Week	Age	Sex (number)				Percent of Total	Weight			Length		
		Male	Female	Unknown	Total		Mean (g)	SD	Number Weighed	Mean (mm)	SD	Number Measured
24 - 30 June	3	1	1	0	2	0.9	86	17.0	2	187	9.2	2
	4	38	36	0	74	31.6	132	24.5	74	214	8.4	74
	5	11	7	0	18	7.7	154	32.4	18	227	11.8	18
	6	26	17	0	43	18.4	194	26.0	43	243	9.1	43
	7	6	6	0	12	5.1	235	28.8	12	253	10.0	12
	8	6	5	0	11	4.7	260	24.2	11	261	28.8	11
	9	9	2	0	11	4.7	284	71.9	11	265	33.7	11
	10	17	18	0	35	15.0	314	42.2	35	278	21.3	35
	11	3	9	0	12	5.1	361	51.8	12	292	8.8	12
	12	0	1	0	1	0.4	348		1	295		1
	13	0	7	0	7	3.0	353	24.7	7	295	9.4	7
	14	5	3	0	8	3.4	395	27.4	8	297	8.5	8
	15											
	16											
	17											
Sample Total		122	112	0	234	100.0	219	92.0	234	246	32.4	234
All Weeks Combined 3 - 30 June	3	2	1	0	3	0.3	73	25.0	3	179	14.0	3
	4	173	130	0	303	25.3	134	19.9	303	216	10.1	303
	5	67	42	0	109	9.1	166	28.0	109	230	14.9	109
	6	133	114	0	247	20.6	210	29.0	247	245	9.0	247
	7	20	22	0	42	3.5	234	35.1	42	252	10.7	42
	8	39	25	0	64	5.3	281	40.6	64	266	15.7	64
	9	47	46	0	93	7.8	313	45.2	93	271	14.3	93
	10	104	121	0	225	18.8	347	42.6	225	281	11.6	225
	11	33	30	0	63	5.3	357	47.0	63	286	10.7	63
	12	9	9	0	18	1.5	391	51.1	18	294	8.9	18
	13	4	12	0	16	1.3	373	46.6	16	293	7.8	16
	14	7	5	0	12	1.0	405	37.7	12	298	8.9	12
	15	1	1	0	2	0.2	462	53.7	2	304	4.9	2
	16											
	17											
All Samples Combined		639	558	0	1197	100.0	240	95.3	1197	250	29.4	1197
Sex Composition (%)		53.4	46.6									
Not Aged		11	9	0	20	1.7	200	62.5	20	246	23.5	20
Sex Composition (%)		55.0	45.0									

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